1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.
2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

K36A MLB SCHEMATIC

REFERENCED FROM K36
02/15/2008

REV	ZONE	ECN	DESCRIPTION OF CHANGE	CK APPD / DATE	ENG APPD / DATE
H		581757	PRODUCTION RELEASED	04/15/08	

Page (.csa)		Contents		Sync	Date
1	1	Table of Contents	RX	USB	09/05/2006
2	2	System Block Diagram	RX	WFERRY-WF	05/11/2006
3	3	Power Block Diagram	MK	POWER	06/30/2005
4	4	CONFIGURATION OPTIONS	RX	SMC	07/18/2005
5	5	Revision History	RX	N/A	N/A
6	7	FUNC TEST 1 OF 2	RX	TP	07/25/2005
7	8	Power Aliases	MK	WFERRY	06/15/2006
8	9	SIGNAL ALIAS /RESET	RX	GPU	07/17/2006
9	10	CPU FSB	RX	T9_MLB_NOME	11/12/2006
10	11	CPU Power & Ground	RX	T9_MLB_NOME	11/12/2006
11	12	CPU Decoupling & VID	RX	MSARWAR	04/26/2006
12	13	CPU ITP700FLEX DEBUG	ES	MASTER	5/23/05
13	14	NB CPU Interface	ES	T9_MLB	10/30/2006
14	15	NB PEG / Video Interfaces	ES	T9_MLB	10/30/2006
15	16	NB Misc Interfaces	ES	T9_MLB	10/30/2006
16	17	NB DDR2 Interfaces	ES	T9_MLB	10/30/2006
17	18	NB Power 1	ES	T9_MLB	10/30/2006
18	19	NB Power 2	ES	T9_MLB	10/30/2006
19	20	NB Grounds	ES	T9_MLB	10/30/2006
20	21	NB Standard Decoupling	ES	WFERRY	06/15/2006
21	22	NB Graphics Decoupling	ES	WFERRY	06/15/2006
22	23	SB Enet, Disk, FSB, LPC	RX	T9_MLB	10/30/2006
23	24	SB PCI, PCIe, DMI, USB	RX	T9_MLB	10/30/2006
24	25	SB Pwr Mgt, GPIO, Clink	RX	T9_MLB	10/30/2006
25	26	SB Power & Ground	RX	T9_MLB	10/30/2006
26	27	SB Decoupling	RX	WFERRY	06/01/2006
27	28	SB Misc	RX	NB	07/26/2005
28	29	Clock (CK505)	DK	DSIMON	06/06/2006
29	30	Clock Termination	DK	DSIMON-WF	06/06/2006
30	31	DDR2 SO-DIMM Connector A	LD	MEMORY	06/20/2005
31	32	DDR2 SO-DIMM Connector B	LD	MEMORY	06/20/2005
32	33	Memory Active Termination	LD	MEMORY	06/20/2005
33	34	AIRPORT CONNECTOR	LT	ENET	08/19/2005
34	37	Ethernet (Yukon)	LT	USB	10/07/2006
35	38	Yukon Power Control	LT	USB	10/07/2006
36	39	ETHERNET CONNECTOR	LT	USB	09/14/2006
37	40	FIREWIRE CONTROLLER	LT	ENET	08/30/2005
38	43	FIREWIRE PORT	LT	GPU	07/17/2006
39	44	PATA CONNECTOR	DK	GPU	07/17/2006
40	45	SATA CONNECTOR	RX	GPU	07/17/2006
41	46	USB EXTERNAL CONNECTORS	LT	USB	06/30/2006
42	47	CONNECTOR MISC	LT	USB	06/29/2006
43	48	IR CONTROLLER & BT INTERFACE	LT	USB	09/05/2006
44	49	SMC	LD	T9_MLB	10/30/2006
45	50	SMC SUPPORT	LD	GPU	07/17/2006
46	51	LPC+ Debug Connector	LD	WFERRY	06/01/2006
47	52	SMBUS CONNECTIONS	LD	WFERRY	06/01/2006
48	53	CPU Current & Voltage Sense	ES	GPU	07/17/2006
49	55	TEMPERATURE SENSE	ES	GPU	06/21/2006
50	56	Fan	LD	ENET	11/10/2005
51	59	SMS	MK	SMC	08/23/2005
52	61	SPI ROMs	RX	WFERRY	04/26/2006
53	62	AUDIO: CODEC	RX	M70AUDIO	03/12/2007
54	66	AUDI0: SPEAKER AMP	RX	M70AUDIO	03/12/2007
55	67	AUDIO: JACK	RX	M70AUDIO	03/12/2007
56	68	AUDIO: JACK TRANSLATORS	RX	M70AUDIO	03/12/2007
57	69	DC-In & Battery Connectors	RX	POWER	07/13/2005
58	70	S0 FETS & Power Sequencing	MK	DSIMON-WF	05/31/2006
59	71	IMVP6 CPU VCore Regulator	MK	POWER	07/13/2005
60	72	Render VCore Supplies	MK	GPU	06/29/2006
61	73	1.5V / 1.05V Supplies	MK	POWER	07/13/2005
62	75	1.8V/0.9V Supplies	MK	POWER	07/13/2005
63	76	5V/3.3V Supplies	MK	POWER	07/13/2005
64	77	3.42V/1.25V Switcher	MK	ENET	12/06/2005
65	78	S3 FET & S3/S5 Control	MK	DSIMON-WF	06/12/2006
66	79	PBUS Supply/Battery Charger	MK	SMC	08/19/2005
67	90	INVERTER,LVDS,TMDS	MK	GPU	06/23/2006
68	92	EXTERNAL TMDS	ES	GRAPHIC	06/06/2005
69	94	MINI-DVI CONNECTOR	ES	EUGENE	05/21/05
70	100	CPU/FSB Constraints	ES	WFERRY	06/08/2006
71	101	NB Constraints	RX	WFERRY	06/12/2006
72	102	Memory Constraints	ES	WFERRY	06/08/2006
73	103	SB Constraints (1 of 2)	LD	WFERRY	06/12/2006
74	104	SB Constraints (2 of 2)	RX	WFERRY	06/12/2006
75	105	Clock Constraints	RX	WFERRY	06/12/2006
76	106	FireWire & SMC Constraints	DK	WFERRY	06/12/2006

K36A EE DRIS:

DK-DINESH KUMAR

Schematic / PCB #'s

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
051-7559	1	SCHEM,MLB,K36A	SCH	CRITICAL	
820-2279	1	PCBF,MLB,K36	PCB	CRITICAL	

DIMENSIONS ARE IN MILLIMETERS
XX ±
X.XX ±
X.XXX ±
ANGLES ±
DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

METRIC

DRAFTER		DESIGN CK	
ENG APPD		MFG APPD	
QA APPD		DESIGNER	
RELEASE		SCALE	NONE

MATERIAL/FINISH NOTED AS APPLICABLE

SIZE D

APPLE INC.

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

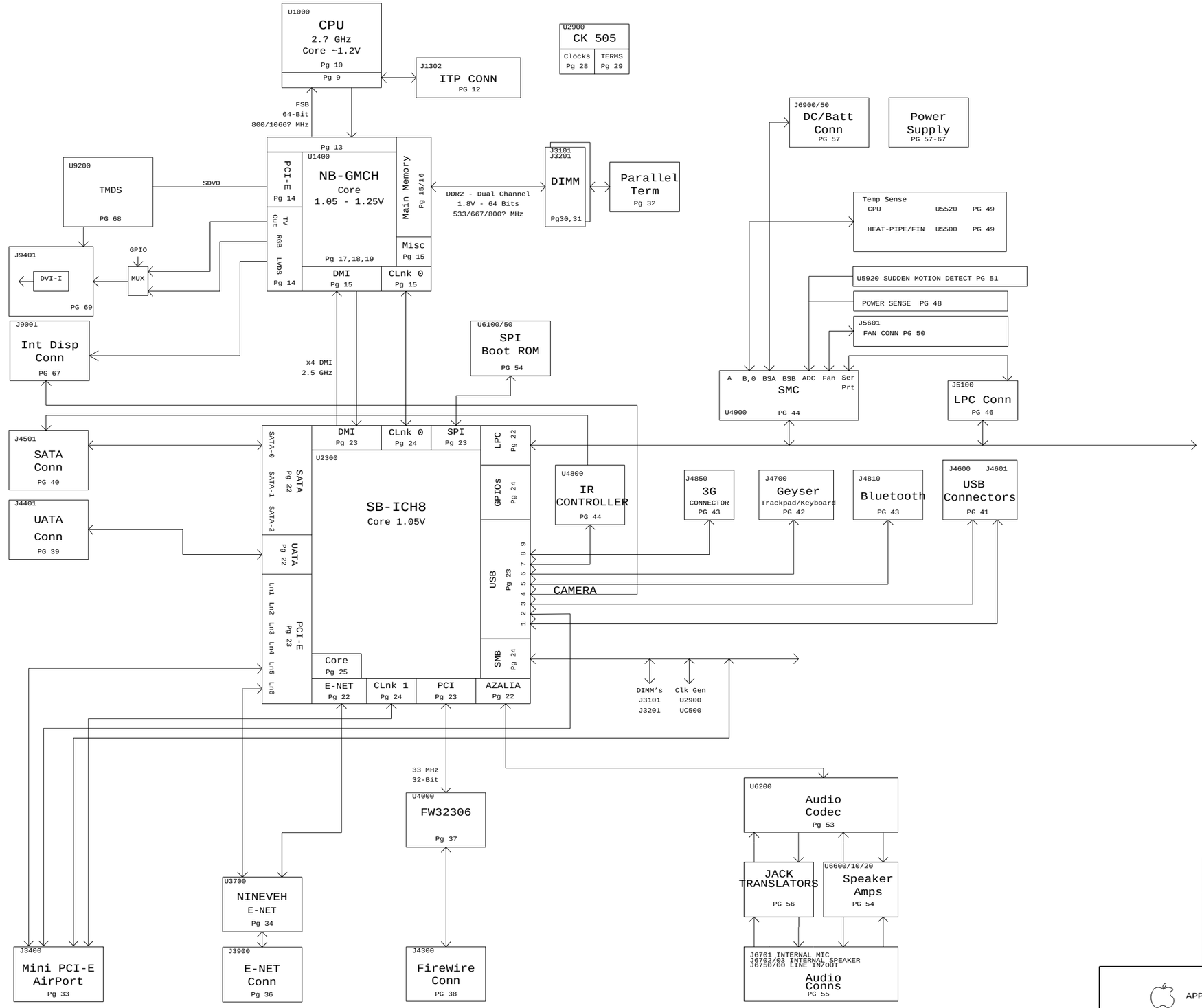
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

TITLE: SCHEM,MLB,K36A

DRAWING NUMBER 051-7559 REV. H

SHT 1 OF 106

WWW.AliSaler.Com



System Block Diagram

SYNC_MASTER=WFERRY-WF SYNC_DATE=05/11/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 2 OF 106	

WWW.AliSaler.Com

K36 POWER SYSTEM ARCHITECTURE

AC ADAPTER IN
DCIN
6A FUSE
SMC_DCIN_ISENSE
U7970
CHGR_EN (S5)
ENABLES
VIN
VOUT
PBUS CONVERTER/ BATTERY CHARGER
ISL6257HRZ U7900 (PAGE 66)
U7975
SMC_BATT_ISENSE
BATTERY
3S2P
BATT_POS_F
SMC_ENRGYSTR_LDO_EN
ENRGYSTR LDO
MAX8719 U7950 (PAGE 66)
D7950
D6901
PPDCIN_G3H
PBUSB_VSENSE
Q5350
PPVBAT_G3H_CHGR_REG
7A FUSE
PPBUS_G3H
ENABLE
3.425V G3HOT
LT3470 U7790 (PAGE 64)
PP3V42_G3H_REG
SMC PWRGD
RN5VD30A-F U5000 (PAGE 45)
SMC_RESET_L
1V05S0_RUNSS (S0)
1V5S0_RUNSS (S0)
1.05V
1.5V
TPS51124 U7300 (PAGE 61)
PP1V05_S0_REG (8A MAX CURRENT)
PP1V5_S0_REG (4A MAX CURRENT)
R7302
PP1V05_S0_REG_R
PGOOD_1V5S0
PGOOD_1V05S0
CLOCK
SLG8LP537V U2900 (PAGE 28)
CLK_PWRGD
ICH8M
CK_PWRGD
VRMPWRGD
PWRBTN*
PLTRST*
RSMRST*
PWROK
CPUPWRGD(GPIO49)
U2300 (PAGE 22)
U2803
VR_PWRGD_CK505
PM_SB_PWROK
PLT_RST_L
CPU_PWRGD
U2801
CPUVCORE
ISL9504 U7100 (PAGE 59)
IMVP_VR_ON
VR_ON
CLKEN#
PGOOD
SMC_CPU_VSENSE
SMC_CPU_ISENSE
PPVCORE_CPU_S0 (36A MAX CURRENT)
VR_PWRGD_CK505_L
VR_PWRGOOD_DELAY
U5300
CPU
PWRGOOD
RESET*
U1000 (PAGE 9)
Q7000
PP5V_S0_FET
P5VS0_EN
4.5V AUDIO
TPS79501 U6201 (PAGE 53)
PP4V5_AUDIO_ANALOG
Q7865
PP5V_S3
P5VS3_EN_L
1.25V S0
TPS62510 U7720 (PAGE 64)
PP1V25_S0_REG
1.9V S3
TPS79501DRB U3820 (PAGE 35)
PP1V9_ENET_REG
PP3V3_S3
PP3V3_ENET_FET
Q7866
P3V3S3_EN_L
CRESTLINE
PWROK
HCPURST*
U1400 (PAGE 13)
FSB_CPURST_L
ICH
PM_S4_STATE_L
PM_SLP_S3_L
PM_SLP_S4_L
Q7860
RC DELAY
P5VS3_EN_L (S3)
P3V3S3_EN_L (S3)
SMC
P25
P60
U4900 (PAGE 45)
LOGIC
CHGR_EN
SMC_PM_G2_EN (S5)
Q7859
5VS5_RUNSS (S5)
3V3S5_RUNSS (S5)
VIN
5V
3.3V
TPS51120 U7600 (PAGE 63)
PGOOD1,2
VREG3
PP5V_S5_REG (7.5A MAX CURRENT)
PP3V3_S5_REG (5A MAX CURRENT)
PP5V_S5
PP3V3_S5
RSMRST_PWRGD
1.2V YUKON
MAX8516 U3830 (PAGE 35)
PM_ENET_EN_L
PP1V2_ENET_REG
Q3801
PP3V3ENET_SS
Q3802
WOL_EN
PM_ENET_EN_L
SMC_ADAPTER_EN
Q7004
P1V8_S0_FET
P1V8S0_EN
MCH DPLL
TPS73112S U2265 (PAGE 21)
P1V25_S0_NB_DPLL
Q7001
PP3V3_S0_FET
P3V3S0_EN
Q3810
P3V3_ENET_FET
PM3V3ENET_SS
PP1V25_S0_FET
TPS3808-1.25V
MR* U7200
SENSE
RESET*
(PAGE 58)
ALL_SYS_PWRGD
SMC_ONOFF_L
BATTERY ONLY: 05
ADAPTER IN : 10-1
SMC
RSMRST_OUT(P15)
PWRGD(P12)→99ms DLY→
IMVP_VR_ON(P16)
RSMRST_IN(P13)
PLT_RST*
PWR_BUTTON(P90)
P17(BTN_OUT)
RST*
SLP_S5_L(P95)
SLP_S4_L(P94)
SLP_S3_L(P93)
U4900 (PAGE 44)
PM_RSMRST_L
IMVP_VR_ON
PM_PWRBTN_L
SMC_RESET_L
PGOOD_1V5S0
PGOOD_1V05S0
PGOOD_SEQUENCER
RST*
PGOOD_1V8S3
PP5V_S0_FET
PP3V3_S0_FET
PP1V8_S0_FET
PM_SLP_S3_L
UVLO_A
UVLO_B
UVLO_C
UVLO_D
ENA*
GATE A
GATE B
GATE C
GATE D
P5VS0_EN
P3V3S0_EN
P1V8S0_EN
RUNSS_GATE_D
ISL6130IRZA U7000 (PAGE 58)
U7870
1V8S3_RUNSS
PM_SLP_S3_L
VLDOIN
S5
S3
1.8V
0.9V
TPS51116 U7500 (PAGE 62)
PP1V8_S3_REG (10.75A MAX CURRENT)
R7502
PP1V8_S3_REG_R
PP0V9_S0_REG
PP1V5_S0_REG
Q7006
Q7007
SOFT START
1V5S0_RUNSS (S0)
1V05S0_RUNSS (S0)
1V25S0_RUNSS (S0)
GPU_VCORE
ISL6263 U7200 (PAGE 60)
GFX_VR_EN
PPVCORE_S0_NB_GFX_IMVP (7.7A MAX CURRENT)

Power Block Diagram

SYNC_MASTER=POWER
SYNC_DATE=06/30/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 3 OF 106	

WWW.AliSaler.Com

Page Notes

Power aliases required by this page:
(NONE)

Signal aliases required by this page:
(NONE)

BOM options provided by this page:
(NONE)

BOARD STACK-UP AND CONSTRUCTION

Top		SIGNAL
2		GROUND
3		SIGNAL(High Speed)
4		SIGNAL(High Speed)
5		GROUND
6		POWER
7		POWER
8		GROUND
9		SIGNAL(High Speed)
10		SIGNAL(High Speed)
11		GROUND
BOTTOM		SIGNAL

MLB STACKUP

LAYER		THICKNESS (MM)	TRACE WIDTH (MM)
CONFORMAL_COAT		0.018	
L1	SIGNAL(TOP)	0.047	0.1
L1-L2		0.07	
L2	GROUND	0.014	---
L2-L3		0.076	
L3	SIGNAL	0.014	0.079
L3-L4		0.156	
L4	SIGNAL	0.014	0.079
L4-L5		0.076	
L5	GND	0.014	---
L5-L6		0.07	
L6	POWER	0.031	---
L6-L7		0.076	
L7	POWER	0.031	---
L7-L8		0.07	
L8	GROUND	0.014	---
L8-L9		0.076	
L9	SIGNAL	0.014	0.1
L9-L10		0.156	
L10	SIGNAL	0.014	0.1
L10-L11		0.076	
L11	GROUND	0.014	0.1
L11-L12		0.07	
L12	SIGNAL(BOTTOM)	0.047	0.1
CONFORMAL_COAT		0.018	
TOTAL		1.276	---

BOM OPTION

BOMOPTION	K36 GOOD 630-9104 PVT	K36 BETTER 630-9105 PVT	K36 BEST 630-9106 PVT	M70 GOOD 630-7935 CONCEPT
COMMON	V	V	V	V
ALTERNATE	V	V	V	V
ARB_ONLY				
K36	V	V	V	V
LPCPLUS				V
INVERTER_BUF	BOM OPTION REMOVED	BOM OPTION REMOVED	BOM OPTION REMOVED	V
INVERTER_UNBUF	BOM OPTION REMOVED	BOM OPTION REMOVED	BOM OPTION REMOVED	
ITP				V
NO_REBOOT_MODE				
NBCFG_DMI_REVERSE				
NBCFG_DMI_X2				
NBCFG_DYN_ODT_DISABLE				
NBCFG_PEG_REVERSE				
NBCFG_SDVO_AND_PCIE				
GOOD	V			V
BETTER		V		
BEST			V	
K36_PGM	V	V	V	V
YUKON_EC				
YUKON_ULTRA	V	V	V	V
NORMAL	V	V		V
FANCY			V	
STANDOFF	V	V	V	V
ODD_PWR_CORE	V	V	V	V
ODD_PWR_RESUME				
ISL6126	BOM OPTION REMOVED	BOM OPTION REMOVED	BOM OPTION REMOVED	
ISL6130	BOM OPTION REMOVED	BOM OPTION REMOVED	BOM OPTION REMOVED	V

BOM TABLE FOR HF POSCAPS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
128S0147	4	HF VERSION OF 128S0057	C4610,C4611,C6830,C6831	CRITICAL	K36
128S0164	3	HF VERSION OF 128S0073	C2130,C2716,C7543	CRITICAL	K36
128S0148	1	HF VERSION OF 128S0085	C6605	CRITICAL	K36
128S0169	3	HF VERSION OF 128S0111	C7220,C7352,C7542	CRITICAL	K36
128S0160	2	HF VERSION OF 128S0113	C2173,C2700	CRITICAL	K36
128S0150	6	HF VERSION OF 128S0115	C6204 C6205,C7651,C7652,C7691,C7692	CRITICAL	K36
128S0157	1	HF VERSION OF 128S0122	C2220	CRITICAL	K36
128S0162	1	HF VERSION OF 128S0123	C2140	CRITICAL	K36
128S0135	2	HF VERSION OF 128S0129	C6601,C6603	CRITICAL	K36

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
337S3592	1	IC,POC,SLAPS,PRQ,M0/3M,2.1/0.8G,479FCBGA	U1000	CRITICAL	GOOD
337S3576	1	IC,POC,SLAPR,PRQ,M0/3M,2.4/0.8G,479FCBGA	U1000	CRITICAL	BETTER
337S3576	1	IC,POC,SLAPR,PRQ,M0/3M,2.4/0.8G,479FCBGA	U1000	CRITICAL	BEST
337S3586	1	IC,POC,Q72F,Q5,C0,2.1/0.8G,3M,479FCBGA	U1000	CRITICAL	GOOD_FUSED
337S3587	1	IC,POC,Q72F,Q5,NON-DTS,M0,2.1/0.8G,3M,479FCBGA	U1000	CRITICAL	GOOD_NON_DTS
337S3561	1	IC,POC,Q72F,Q5,C0,2.4/0.8G,3M,479FCBGA	U1000	CRITICAL	BETTER_FUSED
337S3561	1	IC,POC,Q72F,Q5,C0,2.4/0.8G,3M,479FCBGA	U1000	CRITICAL	BEST_FUSED

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
337S3598	337S3592	?	U1000	THERMTRIP SCREENED
337S3599	337S3586	?	U1000	THERMTRIP SCREENED
337S3600	337S3576	?	U1000	THERMTRIP SCREENED
337S3604	337S3561	?	U1000	THERMTRIP SCREENED

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
338S0516	1	IC,CRESTLINE,GM965,667	U1400	CRITICAL	K36
338S0434	1	IC,ICH8,BGA	U2300	CRITICAL	K36
516-0162	2	IN-LINE SODIMM CONNECTOR	J3101,J3201	CRITICAL	K36

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
341S2273	1	IC,16MBIT SPIN SPI FLASH ROM,FOR K36A	U6100	CRITICAL	K36_PGM
341S2060	1	IC,EEPROM,SERIAL IIC,8KBIT,SO8	U3780	CRITICAL	K36_PGM
341S2275	1	IC,SMC,HS8/2116 FOR K36A	U4900	CRITICAL	K36_PGM
341S2093	1	IC,CYPRESS,CY7C63833,ENCORE_II,USB_CONTR	U4800	CRITICAL	K36_PGM

LOCKED BOOTROM PN 341S2274 FOR K36A

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
826-4393	1	LBL,P/N LABEL,PCB,28MMX6MM	EEE:0PH	CRITICAL	GOOD
826-4393	1	LBL,P/N LABEL,PCB,28MMX6MM	EEE:0PJ	CRITICAL	BETTER
826-4393	1	LBL,P/N LABEL,PCB,28MMX6MM	EEE:0PK	CRITICAL	BEST

CONFIGURATION OPTIONS

SYNC_MASTER=SMC SYNC_DATE=07/18/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	4	106

WWW.AliSaler.Com

Revision History

M70 PROTO TO EVT CHANGES

- WAKE-ON-WIRELESS SUPPORT - RADAR: 4954357
- ADD ISOLATION BUFFER FOR ODD_RESET_L SIGNAL, ADD 100K PULL-DOWN TO ODD_PWR_EN_L, ADD ‘DRAG’ CIRCUIT TO PROPERLY DISCHARGE ODD POWER WHEN IT’S TURNED OFF - RADAR: 4923903
- ADD 270K PULL-DOWN RESISTOR ON HTPLG - RADAR: 4888755
- LOWER RDS(ON) MOSFET (FDC606P - APN: 376S0552) FOR ODD AND LCD POWER - RADAR: TBD
- HIGH-PRECISION 0.1% RESISTORS TO INCREASE OUTPUT VOLTAGE REGULATION (5V, 3.3V, PBUS_LDO) ACCURACY - RADAR:4972500
- FIX LINDA CARD POWER ALIAS (NEED TO CONNECT TO PP3V42_G3HOT INSTEAD OF PP3V3_S5) - RADAR: 4927858
- FIX MOJO-CARD SMC TX, RX REVERSAL - RADAR: 4910888
- NO STUFF 3G CONNECTOR CIRCUITRY
- CHANGE BOM STUFFING TO SPEED UP PORT POWER SHUT-OFF RESPONSE TIME DURING ACTIVE LATE-VG EVENT (RADAR: 4985252)
- CHANGE BOM STUFFING TO ENABLE ON-BOARD MICROPHONE CONNECTOR (M42/M42A SOLUTION) INSTEAD OF ROUTING MICROPHONE THROUGH LVDS CABLE
- CHANGE LOAD CAP STUFFING OPTION FOR RTC AND ETHERNET CRYSTALS TO MEET 5XESR (-R) REQUIREMENT
- CHANGE 10UF, 16V CPU VCORE CAPS TO 10UF, 6.3V CAPS - RADAR: 4952553
- MOVE SMC RESET BUTTON PAD TO TOP SIDE OF MLB - RADAR: 4920913
- MODIFY FIREWIRE CONNECTOR SYMBOL TO SUPPORT MINI-DVI CONNECTOR WITH TAB
- TEST POINT MOVEMENTS REQUESTED BY ICT AND MAC-1 GROUPS - RADAR: 4924481

M70 EVT TO DVT CHANGES

3/5/2007

CSA PAGE 8:
- 4954357 ADD =PP3V3_S3_AIRPORT_AUX BACK TO PP3V3_S3 ALIAS.
CSA PAGE 34:
- 4954357 BREAK OUT =PP3V3_S3_AIRPORT_AUX{J3400.PIN 24} FROM PP3V3_S3_AP_AUX_AGAIN.
- 4954357 MOVE C3409 AND C3410 FROM PP3V3_S3_AP_AUX RAIL TO =PP3V3_S3_AIRPORT_AUX RAIL.
CSA PAGE 49:
- 5040728 STUFF C9421 FOR EMI.
CSA PAGE 62,66,67,68:
- SYNC FROM AUDIO TEAM.
CSA PAGE 67:
- 4999533 SWAP PIN 2 AND PIN 3 OF MIC CONNECTOR, BACK TO M42 PIN OUT.
CSA PAGE 79:
- 5029811 CHANGE Q7940 FROM 376S0326 TO 376S0558.

3/8/2007

CSA PAGE 22:
- 4986074 CHANGE L2205 TO R2205(100OHM,5%,1/10W,0603).
CSA PAGE 25:
- 4924143 CHANGE R2514 FROM 100K PULL-DOWN TO 10K PULL-UP TO 3.3V_S5.
CSA PAGE 77:
- 5040847 SYNC 1P25V REGULATOR CIRCUIT FROM M82. CHANGE R_AND C_TO 0402. CHANGE =PP3V3_S5_P1V25S0 TO =PP3V3_S5_1V25S0, C7723 FROM 22PF TO 10000PF, C7724 FROM 22PF TO 1000PF, C7728 FROM 2.2NF TO 10000PF, AND REVERT REFERENCE DESIGNATORS. (CHANGE FROM TPS62510 TO LTC3412A)

3/12/2007

CSA PAGE 25:
- 4924143 CHANGE R2514 FROM 100K PULL-UP TO 47K PULL-UP.
CSA PAGE 45:
- UPDATE SYMBOL FOR J4501.
CSA PAGE 62,66,67,68:
- SYNC FROM AUDIO TEAM.
CSA PAGE 94:
- 4986074 CHANGE R9469 FOR CRT_TVO_IREF FROM 1.3K TO 1.21K.

3/14/2007

CSA PAGE 47:
- ADD TEXT NOTE TO UPDATE J4700 FROM 516S0251 TO 516S0588 WHEN SYMBOL IS READY.
CSA PAGE 69:
- ADD TEXT NOTE TO UPDATE J6900 FROM 518S0287 TO 518S0526 WHEN SYMBOL IS READY.
CSA PAGE 90:
- DELETE LVDS_VREFH AND LVDS_VREFL TO GROUND TO FIX LVDS GLITCH.
CSA PAGE 94:
- ADD TEXT NOTE TO CHANGE L9404 FROM 155S0303 TO 155S0348 WHEN SYMBOL IS READY.

M70 DVT TO K36 CHANGES

6/29/2007

CSA PAGE 4:
- CHANGE GOOD CPU FROM 337S3471(1.8G) TO 337S3463(2.0G).
- CHANGE BETTER CPU FROM 337S3470(2.0G) TO 337S3464(2.2G).
- CHANGE BEST CPU FROM 337S3471(2.2G) TO 337S3465(2.4G).
- CHANGE U8 FROM 338S0428(800M) TO 343S0448(667M).
- CHANGE Y8 FROM 338S0427 TO 338S0434.
CSA PAGE 10:
- DISCONNECT GFX_VID<0> TO GND.
- CONNECT GFX_VID<0:3> TO GFX_VID0:3 ON NB.
- ADD R1600 (00HM, 0402) TO CONNECT GFX_VID<4> TO GND.
CSA PAGE 22:
- 5209756 ADD C2207 (0.1UF, 0402).
- SIZING DOWN R2205 FROM 0603 TO 0402 FOR PLACEMENT.
- CHANGE GFX_VID<1:4> TO GFX_VID0:3>.
- CHANGE STRAPPING FROM 0010 ON GFX_VID<1:4> TO 0001 ON GFX_VID<0:3>.
CSA PAGE 39:
- CHANGE I3900 FROM 514S0143 TO 514-0443.
- EDVT BOM OPTION TABLE.
CSA PAGE 46:
- CHANGE U4600 FROM 353S1245 TO 353S1728.
- REMOVE MIN_NECK_WIDTH=0.3MM FROM PP5V_S3_USB2_EXTA/B.
- ADD NOSTUFF R4660 AND R4661.
CSA PAGE 47:
- CHANGE J4700 FROM 516S0251 TO 516S0588.
CSA PAGE 69:
- CHANGE J6900 FROM 518S0287 TO 518S0526.
- REPLACE BATTERY INTERFACE CIRCUIT WITH THE ONE ON M42B ESTAR.
CSA PAGE 94:
- 5040728 CHANGE L9404 FROM 155S0303 TO 155S0348.

7/5/2006

CSA PAGE 4:
- REPLACE ALL M70 WITH K36 (TEXT, BOM OPTIONS, 630 NUMBERS).
CSA PAGE 21:
- CHANGE C2173 FROM 128S0051 TO 128S0113 PER CE.
CSA PAGE 27:
- CHANGE C2700 FROM 128S0051 TO 128S0113 PER CE.
CSA PAGE 28:
- CHANGE I2800 FROM 518S0487 TO 518S0519.
CSA PAGE 45:
- REMOVE R4660 AND R4601 (U4675 BYPASS RESISTORS).
CSA PAGE 48:
- CHANGE I4810 FROM 518S0369 TO 518S0521.
CSA PAGE 55:
- CHANGE I5500 FROM M70 EMC1033 CIRCUIT TO M71 EMC1043 CIRCUIT.
- I5500 CHANGES FROM 2PIN TO 4PIN.
CSA PAGE 56:
- CHANGE J5601 FROM 518S0369 TO 518S0521.
CSA PAGE 67:
- CHANGE J6702 FROM 518S0487 TO 518S0519.
- CHANGE J6703 FROM 518S0369 TO 518S0521.
CSA PAGE 90:
- CHANGE J9000 FROM 518S0369 TO 518S0521.

7/6/2006

CSA PAGE 8:
- REMOVE NO_TEST=TRUE FOR 1V8S3_COMP, 1V8S3_FSET, 3V3S5_COMP, 3V3S5_FSET, 1V05S0_COMP, 1V05S0_FSET, IMVP6_RBIAS, IMVP6_COMP, 5VSS_RUNSS, 1V5S0_RUNSS.
- REMOVE NO_TEST=TRUE FOR CK505_SRC4_CLK_SPN, CK505_SRC1_N/P_SPN, CK505_SRC3_N/P_SPN, CK505_SRC7_N/P_SPN, CK505_SRC_CLKREQ1/3_L*SPN.
- ADD FUNC_TEST=TRUE FOR THRM_EINSTACK_P/N.
- ADD FUNC_TEST=TRUE FOR PP1V05_S0_R.
CSA PAGE 9:
- REMOVE ALIASES FOR GND_CHASSIS_AUDIO_SPKRCONN,GND_CHASSIS_AUDIO_SHIELD1,GND_CHASSIS_AUDIO_SHIELD2,GND_CHASSIS_AUDIO_SHIELD3,MIC_SHIELD_LVDS_R,MIC_SHLD_CONN.
- REMOVE ALIAS FOR =EMEMP_CMROM.
- ADD SPN ALIASES FOR TP_CK505_SRC7_N/P.
- ADD SPN ALIASES FOR CK505_PCI2/4_CLK.
CSA PAGE 12:
- REMOVE R1290 TO R1296 ON CPU_VID<0:6>.
CSA PAGE 14:
- DELETE TEXT NOTE AND WITH RESET BUTTON.
CSA PAGE 15:
- RENAME LVDS_VREFH/L TO TP_LVDS_VREFH/L.
CSA PAGE 25:
- ADD R2507 AND R2506 FOR 10K PU ON GPIO6 AND GPIO17(EXTGPU_RST_L).
- CHANGE R2514 TO 100K.
CSA PAGE 28:
- CHANGE L2902 AND L2903 FROM 155S0302 TO 0OHM R2906 AND R2907.
- NOSTUFF C2807, C2810, C2916, C2911, C2514.
- CHANGE R2909, R2901 FROM 2.2OHM TO 0OHM.
- CHANGE R2902 FROM 10HM TO 0OHM.
CSA PAGE 44:
- REMOVE TEXT NOTE WILL CHANGE TO 606P.
CSA PAGE 45:
- RE_DRAW CPU VOLTAGE SENSE RC FILTERING.
CSA PAGE 62:
- RE-CONNECTED (SHDN INPUT OF U6801 SO THAT IT’S CONTROLLED BY U6200 PORTA VREF. - DISCONNECTED GPIO1 AND TERMINATED IT WITH A 10K PULL DOWN.
- ADDED A NO STUFF ENABLE TO POWER 5VDDO_AT_GPIO1.
- ADDED SMALL 15PF COMPENSATION CAP. TO U6201 FEEDBACK NETWORK (C6224).
CSA PAGE 67:
- CHANGED ALL TRANSIENT SUPPRESSORS TO 6.8V/100PF DEVICES (WERE ORIGINALLY 8V/100PF DEVICES).
- ADDED L6771 AND L6773 TO MIC INPUT EMI FILTER.
- REMOVED DZ6772.
- ADDED R6740 NO STUFF.
CSA PAGE 68:
- CONNECTED MIC_SHLD_CONN TO GND_CHASSIS_AUDIO_MIC THROUGH R6854.
- ADDED R6856 NO STUFF.
CSA PAGE 71:
- RENAME CPU_VID_R<6:0> TO CPU_VID<6:0>.

7/10/2007

CSA PAGE 4:
- BOOTROM PART NUMBER CHANGES FROM 341S2085 TO 341S2196.
- EFI PART NUMBER CHANGES FROM 341S2088 TO 341S2198.
- UPDATE EEE CODES, Z9S FOR GOOD, Z9R FOR BETTER, Z57 FOR BEST.
CSA PAGE 15:
- ADD R1785 =PP3V3_S3_SMBUS_SMC_MGMT TO PP3V3_S3.
CSA PAGE 29:
- ADD CRITICAL TO U2900.
CSA PAGE 44:
- ADD CRITICAL TO U4401.
CSA PAGE 46:
- CHANGE U4675 FROM APN 353S1505 TO APN 353S1742. (SMALL PACKAGE)
- ADD R4670 & R4671. (USB BYPASS ROUTING).
CSA PAGE 49:
- REMOVE ALIAS FOR =SMC_SMS_INT TO SMC_PG1 - SIGNAL SHOULD JUST BE CALLED SMC_SMS_INT.
CSA PAGE 50:
- CHANGE R5077 FROM PULL-UP TO A PULL-DOWN RESISTOR AND NAME IT SMC_SMS_INT.
CSA PAGE 52:
- I2C@3.3V BF SMBUS.
- SMB_ME_CLK AND SMB_ME_DATA ON SOUTHBRIDGE DISCONNECTED FROM SMB_MGMT_CLK AND SMB_MGMT_DATA FROM SMC.
- THE 10K PULL-UP RESISTORS (R5230 AND R5231), AND STILL REMAIN CONNECTED TO PP3V3_S5_SMBUS_SB_ME AND STAY ON THE SB SIDE.
- SMC MANAGEMENT SMBUS CONNECTION:
- ADD TWO NEW 10K PULL-UP RESISTOR (R5232 & R5233) TO =PP3V3_S3_SMBUS_SMC_MGMT.
- THE PULL-UP RESISTORS SHOULD BE CONNECTED BETWEEN SMB_MGMT_CLK AND SMB_MGMT_DATA TO =I2C_SMS_SCL AND =I2C_SMS_SDA OF THE NEW ACCELEROMETER.
CSA PAGE 59:
- ADD 2ND SMS (U5930).
CSA PAGE 62:
- CHANGED C6210 FROM A CASE-R 10UF TANT. CAP. TO A SMA-LE 3.3UF TANT. CAP.
- MADE NO TEST ATTRIBUTE VISIBLE FOR NET NC_VRP CONNECTED TO PIN 37 OF U6200.
CSA PAGE 67:
- REMOVED NO STUFF RESISTORS R6730, R6731, AND R6732. ALSO REMOVED L6774.
- STUFFED R6740.
- MADE DZ6702, DZ6703, DZ6704, DZ6705, DZ6752, DZ6753, DZ6754, DZ6755, DZ6770, DZ6771´ CRITICAL.
CSA PAGE 68:
- NO STUFFED R6854
CSA PAGE 75:
- CHANGE R7208 FROM 8.66K TO 15.8K.

7/11/2007

CSA PAGE 9:
- CHANGE Z0901 AND Z0906 FROM 998-1178 TO 998-1186 (NON-PLATED).
CSA PAGE 31:
- STUFF C3110 AND C3111.
CSA PAGE 32:
- STUFF C3210 AND C3211.
CSA PAGE 39:
- UPDATE BOM FOR FANCY RJ45 CONNECTOR, 514-0475.
CSA PAGE 50:
- REMOVE R5077 (BECOMES R5931).
CSA PAGE 59:
- ADD R5930, 10K PU ON SMC_SMS_INT.
- ADD R5931 (WAS R5077 BEFORE), 10K PD ON SMC_SMS_INIT.
- STUFF U5930 (DIGITAL ACCELEROMETER) CIRCUIT.

7/12/2007

CSA PAGE 43:
- CHANGE J4300 FROM 514-0289 TO 514-0456 (SAME JEDEC).
- UPDATE BOM OPTION TABLE FOR J4300.
- NORMAL CHANGES FROM 514-0359 TO 514-0456, FANCY CHANGES FROM 514-0316 TO 514-0476.
CSA PAGE 46:
- CHANGE J4600 AND J4601 FROM 514-0288 TO 514-0457 (DIFFERENT JEDEC, SAME LANDPATTERN).
- UPDATE BOM OPTION TABLE FOR J4600 AND J4601.
- NORMAL CHANGES FROM 514-0288 TO 514-0457, FANCY CHANGES FROM 514-0315 TO 514-0477.
CSA PAGE 62:
- ADD P66 TITLE AUDIO: CODEC.
CSA PAGE 67:
- CHANGE J6700 FROM 514-0409 TO 514-0459 (DIFFERENT JEDEC, SAME LANDPATTERN).
- UPDATE BOM OPTION TABLE FOR J6700.
- NORMAL CHANGES FROM 514-0409 TO 514-0459, FANCY CHANGES FROM 514-0411 TO 514-0479.
- CHANGE J6750 FROM 514-0408 TO 514-0458 (DIFFERENT JEDEC, SAME LANDPATTERN).
- UPDATE BOM OPTION TABLE FOR J6750.
- NORMAL CHANGES FROM 514-0408 TO 514-0458, FANCY CHANGES FROM 514-0410 TO 514-0478.
CSA PAGE 79:
- CHANGE L7900 FROM 152S0302 TO 152S0670 FOR CORRECT AVL.
CSA PAGE 94:
- UPDATE BOM OPTION TABLE FOR J9401.
- NORMAL CHANGES FROM 514-0375 TO 514-0480, FANCY CHANGES FROM 514-0376 TO 514-0481.

7/13/2007

CSA PAGE 4:
- CHANGE BEST CPU FROM 337S3465(2.4GHZ) TO 337S3464(2.2GHZ).
CSA PAGE 39:
- CHANGE C3831 AND C3832 FROM 138S0582 TO 138S0554 (DON’T NEED LOW-PROFILE PARTS).

7/17/2007

CSA PAGE 59:
- UPDATE SYMBOL FOR U5930, VENDOR PART NUMBER CHANGES FROM SMB380 TO BMA150.

7/24/2007

CSA PAGE 4:
- CHANGE BETTER AND BEST CPU TO G0 STEPPING PARTS (FROM 337S3464 TO 337S3500).
CSA PAGE 22:
- STUFF R2242 AND NOSTUFF R2247.
CSA PAGE 62:
- CHANGE R9201 AND R9202 FROM 5.23K TO 2.94K.
- CHANGE R9211 AND R9212 FROM 16.5K TO 9.09K.

K36 EVT TO DVT1 CHANGES

8/9/2007

PER CE, ALL SANYO POSCAPS HAVE NEW HF PART NUMBERS.
- ALL 128S0057 BECOME 128S0147.
- ALL 128S0073 BECOME 128S0164.
- ALL 128S0065 BECOME 128S0148.
- ALL 128S0111 BECOME 128S0169.
- ALL 128S0113 BECOME 128S0166.
- ALL 128S0115 BECOME 128S0150.
- ALL 128S0122 BECOME 128S0157.
- ALL 128S0123 BECOME 128S0162.
- ALL 128S0129 BECOME 128S0136.
- ADD 0011 TO ALL ABOVE PARTS SO THE HF PARTS IN BOM TABLE TAKE OVER.
CSA PAGE 4:
- ADD BOM OPTION TABLE FOR ALL SANYO POSCAP TO USE HF PARTS.

8/10/2007

CSA PAGE 12:
- C1235 SYMBOL CORRECTED TO REFLECT 20% TOLERANCE.
CSA PAGE 79:
- CHANGE U7920 FROM 107S0077(EOL) TO 107S0110.
- CHANGE R7952 FROM 103S0189 TO 103S0200 FOR HF.

8/13/2007

CSA PAGE 34:
- CHANGE J3400 FROM 516S0406 TO 516S0635 TO ADD ACON AS 2ND SOURCE.

K36 DVT1 TO DVT2 CHANGES

8/30/2007

CHANGE ALL 138S0578 TO 138S0614 FOR ADDITIONAL VENDORS (C2205,C4803,C4804,C7305,C7508,C7605,C7902,C7911,C7912)
CSA PAGE 43:
- ADD ALTERNATE TABLE TO MAKE 155S0369 ALTERNATE OF 155S0326.
CSA PAGE 46:
- ADD ALTERNATE TABLE TO MAKE 155S0310 ALTERNATE OF 155S0322.
CSA PAGE 72:
- CHANGE C7208 FROM 150PF(1.215111) TO 220PF(1.152222).
- CHANGE R7208 FROM 0.001OHM(332S0400) TO 0.001UF(152S0045).
CSA PAGE 94:
- ADD CBTL TO L9405, L9406 AND L9407.
- ADD BOM TABLE TO CHANGE L9405, L9406 AND L9407 FROM 155S0303 TO 155S0371.
- ADD ALTERNATE TABLE TO MAKE 155S0376 ALTERNATE OF 155S0348.

9/3/2007

CSA PAGE 9:
- NOSTUFF C0930.

K36 DVT2 TO PVT CHANGES

9/3/2007

CSA PAGE 73:
- DELETE XW7320.
- PP1V5_S0_REG_P BECOMES =PP1V5_S0_REG.
CSA PAGE 76:
- DELETE XW7620.
- PP3V3_S5_REG_P BECOMES =PP3V3_S5_REG.
- DELETE XW7660.
- PP5V_S5_REG_P BECOMES =PP5V_S5_REG.

9/7/2007

CSA PAGE 4:
- CHANGE U1400 FROM 343S0448 TO 338S0516(NB667, PRQ).
- CHANGE Y1400 FROM 338S0427 TO 338S0508 FOR 317S0582 (2.2GHZ CPU, PRQ).
- CHECK BOM OPTIONS ITP AND LPCPLUS IN TABLE.
CSA PAGE 38:
- ADD BOM OPTION ITP TO R3004 AND R3005.
CSA PAGE 46:
- NOSTUFF C4675,C4677.
- STUFF R4670 AND R4671.
CSA PAGE 59:
- NOSTUFF U5930,C5931,C5932.
- NOSTUFF R5931 AND STUFF R5930.

9/13/2007

CSA PAGE 52:
- CHANGE R5280 AND R5281 TO 1K (RDAR:5188703).
CSA PAGE 92:
- NOSTUFF C9401 FOR EMC (RDAR:5475926).

9/25/2007

CSA PAGE 9:
- IN BOM TABLE, CHANGE PART NUMBER OF Z0903,Z0904,Z0905 AND Z0921 FROM 860-0876 TO 860-0964.
CSA PAGE 73:
- CHANGE C7320 AND L7360 FROM 152S0432 TO 152S0685 TO ADD TDK.
CSA PAGE 76:
- CHANGE L7520 FROM 152S0432 TO 152S0685 TO ADD TDK.

9/27/2007

CSA PAGE 22:
- UNSTUFF R2242 AND STUFF R2247.

10/1/2007

CSA PAGE 72:
- CHANGE R7208 FROM 15.8K TO 4.99K 1%.
- CHANGE R7210 FROM 2.94K TO 499 OHM 1%.

H

SYNC_MASTER=N/A SYNC_DATE=N/A

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 5 OF 106	

Preliminary

WWW.AliSaler.Com

Functional Test Points

Power Supply NO_TESTs

NO_TEST

I93		IMVP6_RBIAS	59A4 59B7
I94		IMVP6_COMP	59A4 59B7
I95		5VS5_RUNSS	63B5 65C5
I96		1V5S0_RUNSS	58B1 61B5

CLOCK NO_TESTS

NO_TEST

I11	TRUE	CK505_CPU0_N	28C4 29D6 75D3
I11	TRUE	CK505_CPU0_P	28C4 29D6 75D3
I11	TRUE	CK505_CPU1_N	28C4 29D6 75D3
I11	TRUE	CK505_CPU1_P	28C4 29D6 75D3
I11	TRUE	CK505_CPU2_ITP_SRC10_N	28C4 29D6 75D3
I11	TRUE	CK505_CPU2_ITP_SRC10_P	28C4 29D6 75D3
I11	TRUE	CK505_DOT96_27M_N	28A4 29B6 75D3
I11	TRUE	CK505_DOT96_27M_P	28A4 29B6 75D3
I11	TRUE	CK505_LVDS_N	28B4 29C6 75C3
I11	TRUE	CK505_LVDS_P	28B4 29C6 75D3
I11	TRUE	CK505_PCIF1_CLK	28B6 29B6 75D3
I11	TRUE	CK505_SRC2_N	28B4 29C6 75C3
I11	TRUE	CK505_SRC2_P	28B4 29C6 75C3
I11	TRUE	CK505_SRC4_N	28B4 29C6 75C3
I11	TRUE	CK505_SRC4_P	28B4 29C6 75C3
I11	TRUE	CK505_SRC5_N	28B4 29C6 75C3
I11	TRUE	CK505_SRC5_P	28B4 29C6 75C3
I11	TRUE	CK505_SRC6_N	28B4 29B6 75C3
I11	TRUE	CK505_SRC6_P	28B4 29C6 75C3
I11	TRUE	CK505_SRC8_N	28A4 29B6 75C3
I11	TRUE	CK505_SRC8_P	28A4 29B6 75C3

FIREWARE NO_TESTS

NO_TEST

I11	TRUE	FW_B_TPA_N_SPN	8D1
I12	TRUE	FW_B_TPA_P_SPN	8D1
I12	TRUE	FW_B_TPBIAS_SPN	8D1
I12	TRUE	FW_B_TPB_N_SPN	8D1
I12	TRUE	FW_B_TPB_P_SPN	8D1
I12	TRUE	FW_C_TPA_N_SPN	8D1
I12	TRUE	FW_C_TPA_P_SPN	8D1
I12	TRUE	FW_C_TPBIAS_SPN	8D1
I12	TRUE	FW_C_TPB_N_SPN	8D1
I12	TRUE	FW_C_TPB_P_SPN	8D1

LVDS NO_TESTS

NO_TEST

I12	TRUE	LVDS_B_CLK_N_SPN	8D5
I12	TRUE	LVDS_B_CLK_P_SPN	8D5
I12	TRUE	LVDS_B_DATA_N0_SPN	8D5
I12	TRUE	LVDS_B_DATA_N1_SPN	8D5
I12	TRUE	LVDS_B_DATA_N2_SPN	8D5
I12	TRUE	LVDS_B_DATA_P1_SPN	8D5
I12	TRUE	LVDS_B_DATA_P2_SPN	8D5

NO_TEST

I12	TRUE	SMC_FAN_3_TACH	44A4 44A8

Fan Connectors

FUNC_TEST

I14	TRUE	=PP5V_S0_FAN_RT	7A7 50C4
I14	TRUE	FAN_RT_PWM	50B3
I14	TRUE	FAN_RT_TACH	50C3
I14	TRUE	=PP3V3_S0_FAN_RT	7C4 50C4
I14	TRUE	SMC_FAN_1_CTL	44A8 50B4
I14	TRUE	SMC_FAN_1_TACH	44A8 50C4

LPC+ Debug Connector

FUNC_TEST

I14	TRUE	=PP3V42_G3H_LPCPLUS	7B1 46C6
I14	TRUE	=PP5V_S0_LPCPLUS	7A7 46C6
I14	TRUE	LPC_AD<0>	22D4 44C8 46C6
I14	TRUE	LPC_AD<1>	22D4 44C8 46C6
I14	TRUE	LPC_FRAME_L	22D4 44C8 46B6
I17	TRUE	PM_CLKRUN_L	24C8 37A5 44C5 46B6
I17	TRUE	BOOT_LPC_SPI_L	23B5 46B6
I17	TRUE	SMC_TMS	44B5 45C5 46B6
I17	TRUE	DEBUG_RESET_L	27D1 46B6
I17	TRUE	SMC_TRST_L	44C1 46B6
I17	TRUE	SMC_TDO	44B5 45C5 46B6
I17	TRUE	SMC_MD1	44D1 46B6
I17	TRUE	SMC_TX_L	41A8 44B8 44C5 45D5 46B6
I18	TRUE	FWH_INIT_L	46C5
I18	TRUE	PCI_CLK33M_LPCPLUS	29B3 46C4 75C3
I18	TRUE	LPC_AD<2>	22D4 44C8 46C4
I18	TRUE	LPC_AD<3>	22D4 44C8 46C4
I18	TRUE	INT_SERIRQ	24C8 44C8 46B4
I18	TRUE	PM_SUS_STAT_L	24D5 44C5 46B4
I18	TRUE	SMC_TDI	44B5 45C5 46B4
I18	TRUE	SMC_TCK	44B5 45C5 46B4
I18	TRUE	SMC_RESET_L	44C3 45D7 46B4
I18	TRUE	SMC_NMI	44C1 46B4
I19	TRUE	SMC_RX_L	41A8 44B8 44C5 45D5 46B4
I19	TRUE	LINDACARD_GPIO	24A7 24D5 46B4

Other Func Test Points

FUNC_TEST

I19	TRUE	=PP1V05_S0_REG	7D8 61B8

SMBus FUNC_TEST

I182	TRUE	SMBUS_SMC_B_S0_SCL	47C5 76C3
I18	TRUE	SMBUS_SMC_B_S0_SDA	47C5 76C3

FIREWIRE FUNC_TEST

I18	TRUE	PPFW_SWITCH	38D3

SLEEP LED FUNC_TEST

I18	TRUE	SYS_LED_ANODE	40C5 45A3

SMC FUNC_TEST

I18	TRUE	SMC_LID	42C3 44B5 45C5 57A8
I18	TRUE	SMC_MANUAL_RST_L	45D8
I18	TRUE	SMC_CPU_VSENSE	44C5 48B1

Power Supply FUNC_TEST

I18	TRUE	ALL_SYS_PWRGD	27A5 44D8 58A3
I18	TRUE	PPVCORE_S0_CPU	7D7
I22	TRUE	PP1V05_S0_R	7D7
I18	TRUE	PP1V05_S0	7D7 45D2
I18	TRUE	PP1V5_S0	7C7
I18	TRUE	PP1V8_S0	7B7
I18	TRUE	PP3V3_S0	7D4 45D1
I18	TRUE	PP5V_S0	7A7
I18	TRUE	PP1V2_ENET_S0	7B5
I18	TRUE	PP1V8_S3	7B4
I17	TRUE	PP3V3_S3	7A4
I17	TRUE	PP5V_S3	7A4
I17	TRUE	PP3V3_S5	7D1
I17	TRUE	PP5V_S5	7C1
I17	TRUE	PP3V42_G3H	7C1
I17	TRUE	PPBUS_G3H	7B1
I17	TRUE	PP18V5_G3H	7B1
I18	TRUE	PP0V9_S0	7D7
I22	TRUE	PP3V3_S3_BT_F	43D2
I23	TRUE	GND_BT_F	43C2

Battery Digital Connector

FUNC_TEST

I13	TRUE	SMC_BS_ALRT_L	44C5 45C5 57A2
I13	TRUE	SMBUS_BATT_SCL_F	57A5
I14	TRUE	SMBUS_BATT_SDA_F	57A5
I17	TRUE	BATT_POS	57B5
I18	TRUE	BATT_NEG	57A5

Audio FUNC_TEST

I19	TRUE	=PP5V_S0_AUDIO_AMP	7A7 54B8 54C8 54D8
I13	TRUE	=PP5V_S0_AUDIO	7A7 53A7 56C4
I13	TRUE	GND_AUDIO_AMP	8A4
I13	TRUE	GND_AUDIO_CODEC	8B4
I12	TRUE	ACZ_SDATAIN<0>	8A5 53C7
I12	TRUE	ACZ_SDATAOUT	8A5 53C7
I12	TRUE	ACZ_BITCLK	8A5 53C7
I12	TRUE	ACZ_RST_L	8A5 53B7
I14	TRUE	ACZ_SYNC	8A5 53C7

Battery FUNC_TEST

I12	TRUE	SMC_BATT_ISET	44B5 66A8
I13	TRUE	SMC_BATT_CHG_EN	44C8 45B6 66A4
I13	TRUE	SMC_BC_ACOK	66A6 44C5 45B6 57C3 57C7
I13	TRUE	SMC_ADAPTER_EN	45B3 57C4 57C7 35C7 38C6 44D5
I13	TRUE	SMC_BATT_TRICKLE_EN_L	44C8 45B6 66A3
I13	TRUE	SYS_ONEWIRE	44B8 45D5 57C8

USB FUNC_TEST

I14	TRUE	TP_USB_EXCARD_P	8B2
I14	TRUE	TP_USB_EXCARD_N	8B2
I14	TRUE	TP_USB_EXTC_P	8B2
I14	TRUE	TP_USB_EXTC_N	8B2
I14	TRUE	USB2_BT_F_P	43C2
I22	TRUE	USB2_BT_F_N	43C2
I22	TRUE	USB2_3G_F_N	43A4
I24	TRUE	USB2_3G_F_P	43A4

DC-JACK FUNC_TEST

I15	TRUE	ACIN_ENABLE_GATE	57C3 66A6

Battery charger FUNC_TEST

I15	TRUE	PPVBAT_G3H_CHGR_OUT	66B5 66C2

INVERTER CONNECTOR FUNC_TEST

I16	TRUE	PPBUS_ALL_INV_CONN	67D3
I16	TRUE	INV_GND	67D2
I16	TRUE	PP5V_INV_F	67D3
I16	TRUE	INV_BKLIGHT_PWM_L	67D2

MIC FUNC_TEST

I22	TRUE	MIC_HI	55B3 56A6
I22	TRUE	MIC_LO	55B3 56A6
I22	TRUE	MIC_SHIELD	
I23	TRUE	MIC_HI_CONN	55B1 55D3
I23	TRUE	MIC_LO_CONN	55B1 55D3
I23	TRUE	MIC_SHLD_CONN	55A1 55D3 56A6

SPEAKER FUNC_TEST

I22	TRUE	SPKRCONN_L_N_OUT	54C1 55C2
I22	TRUE	SPKRCONN_L_P_OUT	54C1 55C2
I22	TRUE	SPKRCONN_R_N_OUT	54C1 55C2
I22	TRUE	SPKRCONN_R_P_OUT	54C1 55C2
I22	TRUE	SPKRCONN_SUB_N_OUT	54B1 55C2
I22	TRUE	SPKRCONN_SUB_P_OUT	54B1 55C2

THERMAL FUNC_TEST

I22	TRUE	THRM_HEATPIPE_P	49D6
I22	TRUE	THRM_HEATPIPE_N	49D6
I22	TRUE	THRM_DIMM_DX_F_N	49B6
I22	TRUE	THRM_DIMM_DX_F_P	49B6
I22	TRUE	THRM_FINSTACK_P	49C6
I22	TRUE	THRM_FINSTACK_N	49C6

FUNC TEST 1 OF 2

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE D | DRAWING NUMBER 051-7559 | REV. H

SCALE NONE | SHT 7 OF 106

Preliminary

WWW.AliSaler.Com

"S0,S0M" RAILS

(REGULATOR OUTPUT CPU VCORE PWR)

59D1 =PPVORE_S0_CPU_REG — PPVCORE_S0_CPU (6B2)
MIN_LINE_WIDTH=0.3 mm
MIN_NECK_WIDTH=0.3 MM
VOLTAGE=0.9V
MAKE_BASE=TRUE

(CPU VCOR PWRE)
=PPVCORE_S0_CPU (10B5 10D7 11D7 48B3 48B5)

(REGULATOR OUTPUT CPU 0.90V PWR)

62B8 =PP0V9_S0_REG — PP0V9_S0 (6A2)
MIN_LINE_WIDTH=0.4 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=0.9V
MAKE_BASE=TRUE

(DDR2 TERMINATION 0.9V PWR)
=PP0V9_S3M_MEM_TERM (32D4)

61B8 6B2 =PP1V05_S0_REG — PP1V05_S0 (6B2 45D2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.05V
MAKE_BASE=TRUE
=PP1V05_S0_SB_CPU_IO (22D2 25C3 26C4)
=PPVCORE_S0_SB (25D3 26D2)

61C7 =PP1V05_S0_REG_R — PP1V05_S0_R (6B2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.05V
MAKE_BASE=TRUE
=PP1V05_S0_CPU (9B5 9B6 9C5 9D5 10C7 11A3 12B3 12C5)
=PP1V05_S0_NB_PCIE (20D5)
=PPVCORE_S0_NB (17D3 17D7 20B4 20D8)
=PP1V25R1V05_S0_FSB_NB (13B7 29B6 29C6)
=PP1V25R1V05_S0_NB_VTT (18D3 20C8)
=PP1V05_S0M_NB_VCCAXM (17B3 17C1 20D8)

6A82 =PP1V25_S0_REG — PP1V25_S0 (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.25V
MAKE_BASE=TRUE
=PP1V25_S0_NB_PLL (7C7 20B4 20D3)
=PP1V25_S0_NB_VCCDMI (18C3 20A8)
=PP1V25_S0_SB_DMI (25C3 26A6)
=PP1V25_S0_NB_VCCAXF (20D4)
=PP1V25_S0_NB_PLL (7C7 20B4 20D3)
=PP1V25_S0_NB_VCC (20A8)
=PP1V25_S0_NB_VCCA (20B8)
=PP1V25_S0_FET (58A3)

62C5 61B1 =PP1V5_S0_REG — PP1V5_S0 (6B2)
MIN_LINE_WIDTH=0.5 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.5V
MAKE_BASE=TRUE
=PP1V5_S0_CPU (10B7 11B3)
=PP1V5_S0_NB_TVDAC (21D8)
=PP1V5_S0_SB (26A8 26C8 26D6)
=PP1V5_S0_SB_VCC1_5_A_ARX (25B6 26D5)
=PP1V5_S0_SB_VCC1_5_A_ATX (25B6 26C6)
=PP1V5_S0_SB_VCC1_5_A (25B6 26C2)
=PP1V5_S0_SB_VCCUSBPLL (25A6 26B6)
=PP1V5_S0_SB_VCC1_5_A_USB_CORE (25B6 26C2)
=PP1V5_S0_AIRPORT (33D2)
=PP1V5_S0_NB_FOLLOW (21D5)

58C4 58B8 =PP1V8_S0_FET — PP1V8_S0 (6B2)
MIN_LINE_WIDTH=0.4 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.8V
MAKE_BASE=TRUE
=PP1V8_S0_NB_LVDS (21C5)
=PP1V8_S0_NB_DPLL (21A7)
=PP1V8_S0_TMDS (68D6)

66C2 =PPVCORE_S0_NB_GFX_IMVP — PPVCORE_S0_NB_GFX (6A2)
MIN_LINE_WIDTH=0.5 mm
MIN_NECK_WIDTH=0.25 mm
VOLTAGE=1.25V
MAKE_BASE=TRUE
=PPVCORE_S0_NB_GFX (17B7 17D5 21C5 48B3)

58D4 58C6 =PP5V_S0_FET — PP5V_S0 (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=5V
MAKE_BASE=TRUE
=PP5V_S0_SB (26D8)
=PP5V_S0_SATA (40C6)
=PP5V_S0_3G (43B5)
=PP5V_S0_LPCPLUS (6D2 46C6)
=PP5V_S0_ISENSECAL (48B8)
=PP5V_S0_FAN_RT (6D2 50C4)
=PP5V_S0_AUDIO (6D1 53A7 56C4)
=PP5V_S0_AUDIO_AMP (6D1 54B8 54C8 54D8)
=PP5V_S0_CPU_IMVP (59D8)
=PP5V_S0_NB_GFX_IMVP (60D2)
=PP5V_S0_LCD (67D7)
=PP5V_S0_TMDS (69D7)
=PP5V_S0_NB_TVDAC (21D6)
=PP5V_S0_IDE_RESET (39B7)

58D3 58C4 58C3 58B8 58B3 58A3 =PP3V3_S0_FET — PP3V3_S0 (6A2 45D1)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=3.3V
MAKE_BASE=TRUE
=PP3V3_S0_NB_VCCHV (15B7 15C7 18B3 20A8 21B7)
=PP3V3_S0_NB_FOLLOW (20B2)
=PP3V3_S0_SB_GPIO (22D2 22D7 24B3 24D8)
=PP3V3_S0_SB_VCCGLAN3_3 (25A6)
=PP3V3_S0_SB_VCC3_3_PCI (25B3 26B4)
=PP3V3_S0_SB_VCC3_3_IDE (25C3 26B4)
=PP3V3_S0_SB_VCC3_3_VCCPCORE (25C3 26A6 26C6)
=PP3V3_S0_SB_VCC3_3_SATA (25C3 26B8)
=PP3V3_S0_SB_VCC3_3_DMI (25C3 26A8)
=PP3V3_S0_SB (26D8 39C8)
=PP3V3_S0_SB_PM (27B6 27B8)
=PP3V3_S0_RSTBUF (27D4)
=PP3V3_S0_AIRPORT (33C6)
=PP3V3_S0_FW (38C6)
=PP3V3_S0_PATA (39C2)
=PP3V3_S0_SMC_LS (45D4)
=PP3V3_S0_LPCPLUS (46C4)
=PP3V3_S0_SMBUS_SB (47D8)
=PP3V3_S0_SMBUS_SMC_0_S0 (47D5)
=PP3V3_S0_SMBUS_SMC_B_S0 (47C5)
=PP3V3_S0_THRM_SNR (49C2 49D2)
=PP3V3_S0_FAN_RT (6D2 50C4)
=PP3V3_S0_ENET (8A4)
=PP3V3_S0_AUDIO (53A7 53D7 55D8 56B5)
=PP3V3_S0_IMVP (59D8)
=PP3V3_S0_NB_GFX_IMVP (60C7)
=PP3V3_S0_PDCISENS (60C2 61C5 66C3)
=PP3V3_S0_LCD (67B5 67B7 67C6)
=PP3V3_S0_TMDS (7C4 68B1 68B2 68B7 68C8 68D8 69B7 69C2 69C8)
=PP3V3_S0_CPUPOWER (48D2)
=PP3V3_S0_PBATTISENS (66B3)
=PP3V3R1V5_S0_SB_VCCHDA (25B3 26C4)
=PP3V3_S0_SB_PCI (23A3)
=PP3V3_S0_NB_VCCA_PEG_BG (18C6 20A6)
=PPSPD_S0_MEM (30A7 31A3 31A7)
=PP3V3_S0MWOL_SB_VCCCL3_3 (25A6 26B2)
=PP3V3_S0MWOL_SB_VCCLAN3_3 (25A3 26D3)
=PP3V3_S0MWOL_SB_CLINK0 (24C1)
=PP3V3_S0_CK505 (28C8 28D3 28D8 29B2 29D2)
=PP3V3_S0_NB_VCCSYNC (18D6 21B5)
=PP3V3_S0_NB (69C8)
=PP3V3_S0_TMDS (7C4 68B1 68B2 68B7 68C8 68D8 69B7 69C2 69C8)

35C1 =PP1V2_ENET_REG — PP1V2_ENET_S0 (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.2V
MAKE_BASE=TRUE
=PP1V2_ENET_PHY (34D6)

35D4 =PP3V3_ENET_FET — =PP3V3_ENET_PHY (34D6)
MIN_LINE_WIDTH=0.2 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=3.3V
MAKE_BASE=TRUE

35D1 35B2 =PP1V9_ENET_REG — PP1V9_ENET_S0 (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=2.5V
MAKE_BASE=TRUE
=PP1V8_S0_YUKON (36D8)
=PP1V8R2V5_ENET_PHY (34C7)

"S3" RAILS

62B2 =PP1V8_S3_REG — PP1V8_S3 (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.8V
MAKE_BASE=TRUE
=PP1V8_S3_FET (58C5)
=PP1V8_S3_MEMVREF (20A5 20A6)
=PP1V8_S3_MEM (30B2 30D4 30D6 31B2 31D4 31D6)
=PP1V8_ENET_P1V8ENETFET (35C3)

62C4 =PP1V8_S3_REG_R — PP1V8_S3_MEM_NB (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.4 mm
VOLTAGE=1.8V
MAKE_BASE=TRUE
=PP1V8_S3M_MEM_NB (15D2 17D7 20C8 30D2 31D2)
=PP1V8_S3_NB_VCC (20A4)

65C3 65A4 =PP3V3_S3_FET — PP3V3_S3 (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=3.3V
MAKE_BASE=TRUE
=PP3V3_S3_AIRPORT_AUX (33C2)
=PP3V3_S3_FW (37D5)
=PP3V3_S3_PCI (37C5)
=PP3V3_S3_BT (43D3)
=PP3V3_S3_SMS (51C7)
=PP3V3_S3_SMBUS_SMC_A_S3 (47D3)
=PP3V3_S3_PDCISENS (62A2 62C2)
=PP3V3_S3_ENETPWRCTL (35D7)
=PP3V3_S3_SMBUS_SMC_MGMT (47C3 51B6)
=PP3V3_ENET_P3V3ENETFET (35D3)

65B4 =PP5V_S3_FET — PP5V_S3 (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=5V
MAKE_BASE=TRUE
=PP5V_S3_SYSLED (40B6 45A4)
=PP5V_S3_GEYSER (42D6)
=PP5V_S3_IR (43D8)
=PP5V_S3_CAMERA (67A5)

"S5" RAILS

63B1 =PP3V3_S5_REG — PP3V3_S5 (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=3.3V
MAKE_BASE=TRUE
=PP3V3_S5_SB_PM (27C5)
=PP3V3_S5_SB_USB (23C8)
=PP3V3_S5_SB_GPIO (24D8)
=PP3V3_S5_SB (24A3 24A8 26D8 35C7)
=PP3V3_S5_FET (58C5 65A5 65C4)
=PP3V3_S5_SB_VCCSUS3_3_USB (25A3 26D2)
=PP3V3_S5_SB_VCCSUS3_3 (25A3 26B6 26D2)
=PP3V3_S5_SB_3V3_VCCSUSHDA (25B3 26B2)
=PP3V3_S5_FWLATEVG (38A6 38A8)
=PP3V3_S5_SMBUS_SB_ME (47A7)
=PP3V3_S5_ROM (52C6)
=PP3V3_S5_LCD (67C7)
=PP3V3_S5_SB_CLINK1 (24B1)
=PP3V3_S5_1V25S0 (64B6)
=PP3V3_S5_AIRPORT_AUX (33C7 33D6 33D7)

63B8 =PP5V_S5_REG — PP5V_S5 (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=5V
MAKE_BASE=TRUE
=PP5V_S5_SB (26D8)
=PP5V_S5_PATA (39D6)
=PP5V_S5_USB (41C8)
=PP5V_S5_1V51V05S0 (61C4)
=PP5V_S5_1V8S30V9S0 (62C5)
=PP5V_S5_PWRCTL (65B6)
=PP5V_S5_FET (58B3 58C6 58D5 65B5)

"G3H" RAILS

64C4 =PP3V42_G3H_REG — PP3V42_G3H (6A2)
MIN_LINE_WIDTH=0.3 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=3.42V
MAKE_BASE=TRUE
=PP3V42_G3H_SMC (44D4 45C1 45D4 45D8 51B8)
=PP3V42_G3H_SMCVREF (45C8)
=PP3V42_G3H_SMBUS_SMC_BSA (47C3)
=PP3V42_G3H_ACIN (57C4 66A5 66A8 66B8)
=PP3V42_G3H_LIDSWITCH (57A8)
=PP3V42_G3H_PWRCTL (65C7)
=PP3V42_G3H_SB_RTC (27D7)
=PP3V42_G3H_SMCUSBMUX (41A6)
=PP3V42_G3H_LPCPLUS (6D2 46C6)

57D1 =PP18V5_G3H_INRUSH — PP18V5_G3H (6A2)
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.20 MM
VOLTAGE=18.5V
MAKE_BASE=TRUE
=PP18V5_G3H_CHGR (66D8)

57D3 =PPDCIN_G3H — PPDCIN_G3H (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=18.5V
MAKE_BASE=TRUE
=PPVIN_G3H_P3V42G3H (64C6)

66C2 =PPBUSA_G3H — PPBUS_G3H (6A2)
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=18.5V
MAKE_BASE=TRUE
=PPVIN_S0_NB_DPLL
=PPBUS_S5_FWPWRSW (38D5)
=PPVIN_S5_CPU_IMVP (48D7 59C2 59D4 59D8)
=PPVIN_S5_NB_GFX_IMVP (60C2)
=PPBUS_S5_INV (67D4)
=PPVIN_S5_1V8S30V9S0 (62B3)
=PPVIN_S5_5VS5 (63A6 63B6)
=PPVIN_S5_3V3S5 (63B3)
=PPVIN_S5_1V5S0 (61B3)
=PPVIN_S5_1V05S0 (61B5)
=PPVIN_S5_IMVP (45A6)

66B2 =PPBUSB_G3H

Power Aliases

SYNC_MASTER=WFERRY SYNC_DATE=06/15/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE NONE — SHT 8 OF 106

Preliminary

WWW.AliSaler.Com

(EMI PAD FOR INVERTER GONNECTOR)

INVT_CHGND — VOLTAGE=0V, MAKE_BASE=TRUE — ZS0920 EMI-SPRING CLIP-SM-M42

=GND_CHASSIS_3GPOWER

CHASSIS GND

BATTERY,AUDIO,DIP DIMM CONNECTOR CHASSIS GND

GND_CHASSIS_IO Z0906 OMIT 5R2P3-7SQBNP

=GND_BATT_CHGND
=GND_CHASSIS_AUDIO_JACK
=GND_CHASSIS_AUDIO_MIC
=GND_CHASSIS_DIPDIMM_LEFT

SATA,LVDS CONNECTOR CHASSIS GND

GND_CHASSIS_SATA Z0907 OMIT 6P5R2P6-7SQB — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_CHASSIS_LVDS

C0907 0.1UF 10% 16V X5R 402
C0908 0.01UF 10% 16V CERM 402

DCIN CONNECTOR CHASSIS GND

GND_CHASSIS_DCIN Z0902 OMIT 7X7R2P3-5B — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_DCIN_CHGND
=GND_CHASSIS_RJ45
=GND_CHASSIS_TMDS_UPPER

C0930 0.1UF 10% 16V X5R 402 NOSTUFF

I/O CONNECTOR CHASSIS GND

GND_CHASSIS_IO Z0908 OMIT 5P0R2P3-7BLB — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_CHASSIS_FW_DOWN
=GND_CHASSIS_USB

C0910 0.1UF 10% 16V X5R 402
C0911 0.01UF 10% 16V CERM 402

DIP DIMM CONNECTOR CHASSIS GND

GND_CHASSIS_CENTER Z0910 OMIT 5R2P3-7SQB — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_CHASSIS_DIPDIMM_CENTER

C0916 0.1UF 10% 16V X5R 402
C0917 0.01UF 10% 16V CERM 402

DIP DIMM CONNECTOR CHASSIS GND

GND_CHASSIS_RIGHT Z0909 OMIT 5R2P3-7SQB — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_CHASSIS_DIPDIMM_RIGHT

C0914 0.1UF 10% 16V X5R 402
C0915 0.01UF 10% 16V CERM 402

GND_CHASSIS_CPU Z0901 OMIT 5R2P3-7SQBNP

C0912 0.1UF 10% 16V X5R 402
C0913 0.01UF 10% 16V CERM 402

GND_CHASSIS_FANSCREW Z0911 OMIT 5R2P3-7B

C0918 0.1UF 10% 16V X5R 402
C0919 0.01UF 10% 16V CERM 402

CPU HEATSINK STANDOFF SCREW HOLE

Z0903 OMIT STDOFF-4.2OD3.95H-5.52R3.37-6B — NB_RIGHT_DOWN_SCREW — R0912 0 5% 1/16W MF-LF 402

Z0904 OMIT STDOFF-4.2OD3.95H-5.52R3.37-7SQB — CPU_THERMAL_SCREW_UP — R0910 0 5% 1/16W MF-LF 402

Z0903 USE SAME Z0913 NON SHAPE OF A HOOF SYMBOL FOR LAYOUT PLACEMENT
BUT, NEED CHANGE TO HIGH STANDOFF SYMBOL

Z0905 OMIT STDOFF-4.5OD3.95H-1.1-3.2-TH — CPU_THERMAL_SCREW_DOWN — R0911 0 5% 1/16W MF-LF 402

Z0921 OMIT STDOFF-4.5OD3.95H-1.1-3.2-TH — CPU_THERMAL_SCREW_RIGHT — R0921 0 5% 1/16W MF-LF 402

LVDS ALIASES

NO-CONNECT UNUSED LVDS INTERFACE PORTS

LVDS_B_CLK_N	LVDS_B_CLK_N_SPN
LVDS_B_CLK_P	LVDS_B_CLK_P_SPN
LVDS_B_DATA_N<0>	LVDS_B_DATA_N0_SPN
LVDS_B_DATA_N<1>	LVDS_B_DATA_N1_SPN
LVDS_B_DATA_N<2>	LVDS_B_DATA_N2_SPN
TP_LVDS_B_DATAN3	LVDS_B_DATA_N3_SPN
LVDS_B_DATA_P<0>	LVDS_B_DATA_P0_SPN
LVDS_B_DATA_P<1>	LVDS_B_DATA_P1_SPN
LVDS_B_DATA_P<2>	LVDS_B_DATA_P2_SPN
TP_LVDS_B_DATAP3	LVDS_B_DATA_P3_SPN
TP_LVDS_A_DATAP3	LVDS_A_DATA_P3_SPN
TP_LVDS_A_DATAN3	LVDS_A_DATA_N3_SPN

PCI_EXPRESS GRAPHICS ALIASES

NO-CONNECT UNUSED SDVO INTERFACE PORTS

PEG_D2R_N<0>	PEG_D2R_N0_SPN
PEG_D2R_N<2>	PEG_D2R_N2_SPN
PEG_D2R_N<3>	PEG_D2R_N3_SPN
PEG_D2R_N<4>	PEG_D2R_N4_SPN
PEG_D2R_N<5>	PEG_D2R_N5_SPN
PEG_D2R_N<6>	PEG_D2R_N6_SPN
PEG_D2R_N<7>	PEG_D2R_N7_SPN
PEG_D2R_N<8>	PEG_D2R_N8_SPN
PEG_D2R_N<9>	PEG_D2R_N9_SPN
PEG_D2R_N<10>	PEG_D2R_N10_SPN
PEG_D2R_N<11>	PEG_D2R_N11_SPN
PEG_D2R_N<12>	PEG_D2R_N12_SPN
PEG_D2R_N<13>	PEG_D2R_N13_SPN
PEG_D2R_N<14>	PEG_D2R_N14_SPN
PEG_D2R_N<15>	PEG_D2R_N15_SPN
PEG_D2R_P<0>	PEG_D2R_P0_SPN
PEG_D2R_P<2>	PEG_D2R_P2_SPN
PEG_D2R_P<3>	PEG_D2R_P3_SPN
PEG_D2R_P<4>	PEG_D2R_P4_SPN
PEG_D2R_P<5>	PEG_D2R_P5_SPN
PEG_D2R_P<6>	PEG_D2R_P6_SPN
PEG_D2R_P<7>	PEG_D2R_P7_SPN
PEG_D2R_P<8>	PEG_D2R_P8_SPN
PEG_D2R_P<9>	PEG_D2R_P9_SPN
PEG_D2R_P<10>	PEG_D2R_P10_SPN
PEG_D2R_P<11>	PEG_D2R_P11_SPN
PEG_D2R_P<12>	PEG_D2R_P12_SPN
PEG_D2R_P<13>	PEG_D2R_P13_SPN
PEG_D2R_P<14>	PEG_D2R_P14_SPN
PEG_D2R_P<15>	PEG_D2R_P15_SPN
PEG_R2D_C_N<4>	PEG_R2D_C_N4_SPN
PEG_R2D_C_N<5>	PEG_R2D_C_N5_SPN
PEG_R2D_C_N<6>	PEG_R2D_C_N6_SPN
PEG_R2D_C_N<7>	PEG_R2D_C_N7_SPN
PEG_R2D_C_N<8>	PEG_R2D_C_N8_SPN
PEG_R2D_C_N<9>	PEG_R2D_C_N9_SPN
PEG_R2D_C_N<10>	PEG_R2D_C_N10_SPN
PEG_R2D_C_N<11>	PEG_R2D_C_N11_SPN
PEG_R2D_C_N<12>	PEG_R2D_C_N12_SPN
PEG_R2D_C_N<13>	PEG_R2D_C_N13_SPN
PEG_R2D_C_N<14>	PEG_R2D_C_N14_SPN
PEG_R2D_C_N<15>	PEG_R2D_C_N15_SPN
PEG_R2D_C_P<4>	PEG_R2D_C_P4_SPN
PEG_R2D_C_P<5>	PEG_R2D_C_P5_SPN
PEG_R2D_C_P<6>	PEG_R2D_C_P6_SPN
PEG_R2D_C_P<7>	PEG_R2D_C_P7_SPN
PEG_R2D_C_P<8>	PEG_R2D_C_P8_SPN
PEG_R2D_C_P<9>	PEG_R2D_C_P9_SPN
PEG_R2D_C_P<10>	PEG_R2D_C_P10_SPN
PEG_R2D_C_P<11>	PEG_R2D_C_P11_SPN
PEG_R2D_C_P<12>	PEG_R2D_C_P12_SPN
PEG_R2D_C_P<13>	PEG_R2D_C_P13_SPN
PEG_R2D_C_P<14>	PEG_R2D_C_P14_SPN
PEG_R2D_C_P<15>	PEG_R2D_C_P15_SPN

HDA ALIASES

HDA_BIT_CLK	ACZ_BITCLK
HDA_SYNC	ACZ_SYNC
HDA_RST_L	ACZ_RST_L
HDA_SDIN0	ACZ_SDATAIN<0>
HDA_SDOUT	ACZ_SDATAOUT
TP_HDA_SDIN1	HDN_SDIN1_SPN
TP_HDA_SDIN2	HDN_SPIN2_SPN
TP_HDA_SDIN3	HDN_SPIN3_SPN

NB CFG ALIASES

NB_CFG<3>	TP_NB_CFG<3>
NB_CFG<4>	TP_NB_CFG<4>
NB_CFG<6>	TP_NB_CFG<6>
NB_CFG<7>	TP_NB_CFG<7>
NB_CFG<8>	TP_NB_CFG<8>

GND_CHASSIS_IO1 — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_CHASSIS_TMDS_DOWN
=GND_CHASSIS_FW_UPPER

SATA ALIASES

NO-CONNECT UNUSED SATA INTERFACE PORTS

SATA_B_D2R_N	SATA_B_D2R_N_SPN
SATA_B_D2R_P	SATA_B_D2R_P_SPN
SATA_B_R2D_C_N	SATA_B_R2D_C_N_SPN
SATA_B_R2D_C_P	SATA_B_R2D_C_P_SPN
SATA_C_D2R_N	SATA_C_D2R_N_SPN
SATA_C_D2R_P	SATA_C_D2R_P_SPN
SATA_C_R2D_C_N	SATA_C_R2D_C_N_SPN
SATA_C_R2D_C_P	SATA_C_R2D_C_P_SPN

PCI_EXP ALIASES

NO-CONNECT UNUSED PCI_EXP INTERFACE PORTS

TP_PCIE_A_D2R_N	PCIE_A_D2R_N_SPN
TP_PCIE_A_D2R_P	PCIE_A_D2R_P_SPN
TP_PCIE_A_R2D_C_N	PCIE_A_R2D_C_N_SPN
TP_PCIE_A_R2D_C_P	PCIE_A_R2D_C_P_SPN
TP_PCIE_B_D2R_N	PCIE_B_D2R_N_SPN
TP_PCIE_B_D2R_P	PCIE_B_D2R_P_SPN
TP_PCIE_B_R2D_C_N	PCIE_B_R2D_C_N_SPN
TP_PCIE_B_R2D_C_P	PCIE_B_R2D_C_P_SPN
TP_PCIE_EXCARD_D2R_N	PCIE_C_D2R_N_SPN
TP_PCIE_EXCARD_D2R_P	PCIE_C_D2R_P_SPN
TP_PCIE_EXCARD_R2D_C_N	PCIE_C_R2D_C_N_SPN
TP_PCIE_EXCARD_R2D_C_P	PCIE_C_R2D_C_P_SPN
TP_PCIE_FW_D2R_N	PCIE_D_D2R_N_SPN
TP_PCIE_FW_D2R_P	PCIE_D_D2R_P_SPN
TP_PCIE_FW_R2D_C_N	PCIE_D_R2D_C_N_SPN
TP_PCIE_FW_R2D_C_P	PCIE_D_R2D_C_P_SPN

CLOCK ALIASES

NO-CONNECT UNUSED CLOCK INTERFACE PORTS

TP_CK505_SRC1_N	CK505_SRC1_N_SPN
TP_CK505_SRC1_P	CK505_SRC1_P_SPN
TP_CK505_SRC3_N	CK505_SRC3_N_SPN
TP_CK505_SRC3_P	CK505_SRC3_P_SPN
TP_CK505_SRC7_N	CK505_SRC7_N_SPN
TP_CK505_SRC7_P	CK505_SRC7_P_SPN
CK505_PCI2_CLK	CK505_PCI2_CLK_SPN
CK505_PCI4_CLK	CK505_PCI4_CLK_SPN
=ENET_CLKREQ_L	ENET_CLKREQ_L

SB ALIASES

NO-CONNECT UNUSED CLOCK INTERFACE PORTS

VR_PWRGD_CLKEN	VR_PWRGD_CK505
=SB_CLINK_MPWROK	CLINK_MPWROK
=SB_SATA_CLKREQ_L	SB_CLK100M_SATA_OE_L
EXTGPU_RST_L	TP_SB_GPIO17

SO-DIMM ALIASES

NO-CONNECT UNUSED ADDRESS INTERFACE PORTS

MEM_A_A<15>	MEM_A_A15_SPN
MEM_B_A<15>	MEM_B_A15_SPN
TP_MEM_CLKP2	MEM_CLK_P_2_SPN
TP_MEM_CLKN2	MEM_CLK_N_2_SPN
TP_MEM_CLKP5	MEM_CLK_P_5_SPN
TP_MEM_CLKN5	MEM_CLK_N_5_SPN

=GND_AUDIO_CODEC — GND_AUDIO_CODEC — XW0801 SM
=GND_AUDIO_AMP — GND_AUDIO_AMP — XW0802 SM

Ethernet ALIASES

=PP3V3_S0_ENET — =ENET_VMAIN_AVLBL
=YUKON_EC_PP2V5_ENET

AIRPORT CARD STANDOFF SCREW HOLE

Z0912 OMIT STDOFF-4.2OD2.15H-1.2-3.2-TH — NC
Z0913 OMIT STDOFF-4.2OD3.95H-5.52R3.37-6B — NC

FIREWIRE ALIASES

NO-CONNECT UNUSED FIREWIRE INTERFACE PORTS

FW_B_TPBIAS	FW_B_TPBIAS_SPN
FW_B_TPA_P	FW_B_TPA_P_SPN
FW_B_TPA_N	FW_B_TPA_N_SPN
FW_B_TPB_P	FW_B_TPB_P_SPN
FW_B_TPB_N	FW_B_TPB_N_SPN
FW_C_TPBIAS	FW_C_TPBIAS_SPN
FW_C_TPA_P	FW_C_TPA_P_SPN
FW_C_TPA_N	FW_C_TPA_N_SPN
FW_C_TPB_P	FW_C_TPB_P_SPN
FW_C_TPB_N	FW_C_TPB_N_SPN

USB PORT [0] = External USB2.0 Port A

=USB2_EXTA_P — USB2_EXTA_P — USB_EXTA_P
=USB2_EXTA_N — USB2_EXTA_N — USB_EXTA_N
=EXTAUSB_OC_L — EXTAUSB_OC_L — USB_EXTA_OC_L

USB PORT [1] = PCI-E Mini Card

=USB2_AIRPORT_P — USB2_AIRPORT_P — USB_MINI_P
=USB2_AIRPORT_N — USB2_AIRPORT_N — USB_MINI_N

USB PORT [2] = 3G USB

=USB2_3G_P — USB2_3G_P — USB_EXTD_P
=USB2_3G_N — USB2_3G_N — USB_EXTD_N

USB PORT [3] = CAMERA

=USB2_CAMERA_P — USB2_CAMERA_P — USB_CAMERA_P
=USB2_CAMERA_N — USB2_CAMERA_N — USB_CAMERA_N

USB PORT [4] = IR CONTROLLER

=USB2_IR_P — USB_IR_P
=USB2_IR_N — USB_IR_N

USB PORT [5] = Trackpad(Geyser)

=USB2_GEYSER_P — USB2_GEYSER_P — USB_TPAD_P
=USB2_GEYSER_N — USB2_GEYSER_N — USB_TPAD_N

USB PORT [6] = BLUETOOTH

=USB2_BT_P — USB_BT_P
=USB2_BT_N — USB_BT_N

USB PORT [7] = External USB2.0 Port B

=USB2_EXTB_P — USB2_EXTB_P — USB_EXTB_P
=USB2_EXTB_N — USB2_EXTB_N — USB_EXTB_N
=EXTBUSB_OC_L — EXTBUSB_OC_L — USB_EXTB_OC_L

USB PORT [8] = Unused

TP_USB_EXCARD_P — USB_EXCARD_P
TP_USB_EXCARD_N — USB_EXCARD_N

USB PORT [9] = Unused

TP_USB_EXTC_P — USB_EXTC_P
TP_USB_EXTC_N — USB_EXTC_N

ANALOG SWITCH GPIO

PM_EXTTS_L<0> — DIMM_OVERTEMPA_L
PM_EXTTS_L<1> — DIMM_OVERTEMPB_L

NB ALIASES

=GFX_VR_EN	GFX_VR_EN
=NB_CLINK_MPWROK	CLINK_MPWROK
=NB_CLK96M_DOT_P	NB_CLK96M_DOT_P
=NB_CLK96M_DOT_N	NB_CLK96M_DOT_N
=NB_CLK100M_DPLLSS_P	NB_CLK100M_DPLLSS_P
=NB_CLK100M_DPLLSS_N	NB_CLK100M_DPLLSS_N
=NB_TDE_SENSE	
=NB_TDE_FORCE	
=NB_TDB_EORCE	
=NB_TDB_SENSE	

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
860-0964	4	THERMAL STANDOFF	Z0903,Z0904,Z0905,Z0921	STANDOFF
860-0723	1	STANDOFF WIRELESS	Z0912	STANDOFF
860-0749	1	STANDOFF W/THRU HOLES,WIRELESS	Z0913	STANDOFF

SIGNAL ALIAS /RESET

SYNC_MASTER=GPU — SYNC_DATE=07/17/2006

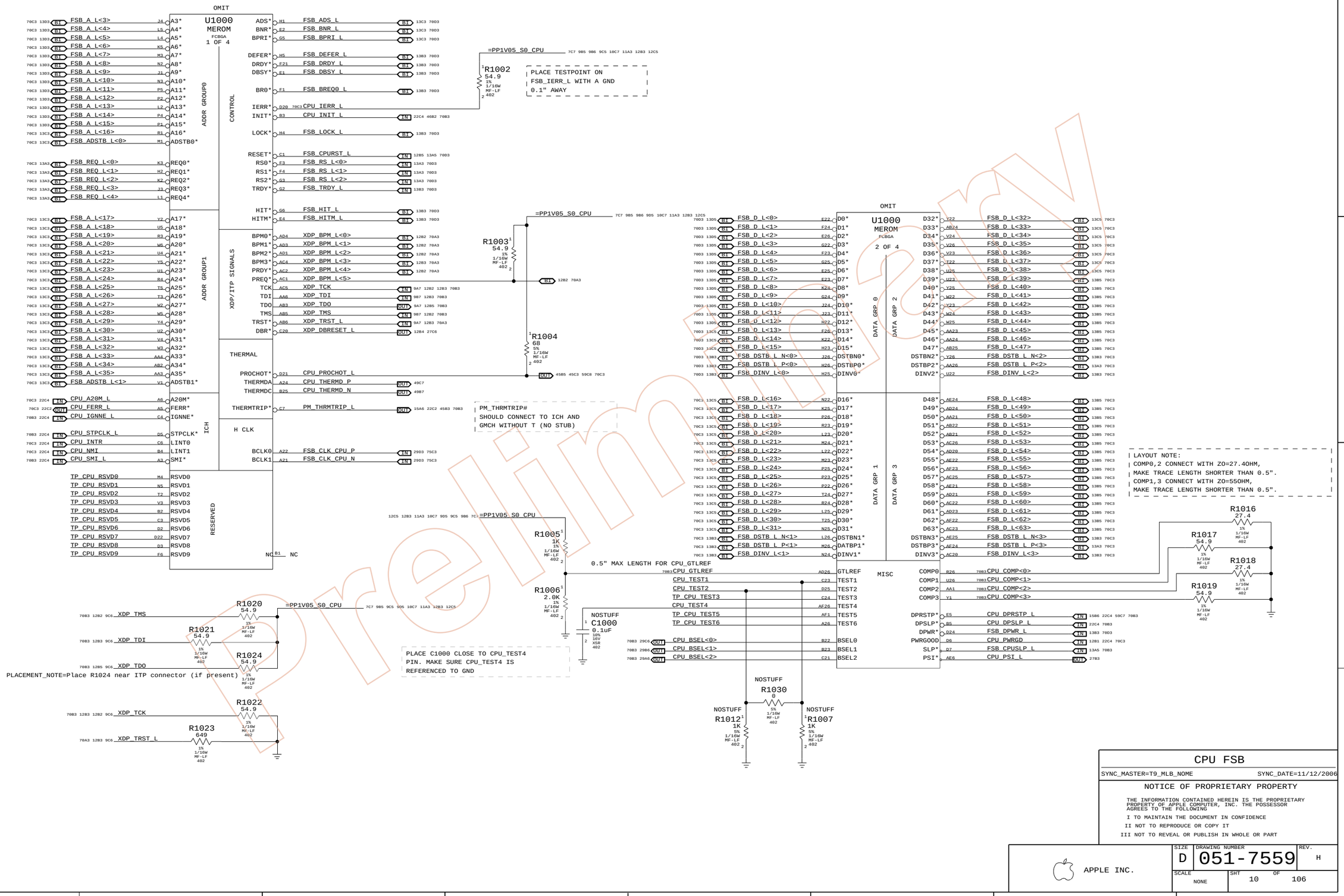
NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 9 OF 106	

WWW.AliSaler.Com



WWW.AliSaler.Com

(CPU CORE POWER)

=PPVCORE_S0_CPU 7D7 10B5 11D7 48B3 48B5

Standard Voltage:

44.0 A (Design Target)

41.0 A (HFM)
30.4 A (LFM)
25.5 A (SuperLFM)

27.4 A (Auto-Halt/Stop-Grant HFM)
17.0 A (Auto-Halt/Stop-Grant SuperLFM)

27.4 A (Sleep HFM)
16.8 A (Sleep SuperLFM)

25.0 A (Deep Sleep HFM)
16.0 A (Deep Sleep SuperLFM)

11.5 A (Deeper Sleep)

9.4 A (Enhanced Deeper Sleep)

Low Voltage:

23.0 A (Design Target)

21.0 A (HFM)
18.7 A (LFM)
TBD A (SuperLFM)

TBD A (Auto-Halt/Stop-Grant HFM)
TBD A (Auto-Halt/Stop-Grant SuperLFM)

TBD A (Sleep HFM)
TBD A (Sleep SuperLFM)

TBD A (Deep Sleep HFM)
TBD A (Deep Sleep SuperLFM)

TBD A (Deeper Sleep)

TBD A (Enhanced Deeper Sleep)

Ultra Low Voltage:

17.0 A (Design Target)

TBD A (HFM)
TBD A (LFM)

TBD A (Auto-Halt/Stop-Grant HFM)
TBD A (Auto-Halt/Stop-Grant LFM)

TBD A (Sleep HFM)
TBD A (Sleep LFM)

TBD A (Deep Sleep HFM)
TBD A (Deep Sleep LFM)

TBD A (Deeper Sleep)

TBD A (Enhanced Deeper Sleep)

OMIT
U1000
MEROM
FCBGA
3 OF 4

VCC: A7 A9 A10 A12 A13 A15 A17 A18 A20 B7 B9 B10 B12 B14 B15 B17 B18 B20 C9 C10 C12 C13 C15 C17 C18 D9 D10 D12 D14 D15 D17 D18 E7 E9 E10 E12 E13 E15 E17 E18 E20 F7 F9 F10 F12 F14 F15 F17 F18 F20 AA7 AA9 AA10 AA12 AA13 AA15 AA17 AA18 AA20 AB9 AC10 AB10 AB12 AB14 AB15 AB17 AB18

VCC: AB20 AB7 AC7 AC9 AC12 AC13 AC15 AC17 AC18 AD7 AD9 AD10 AD12 AD14 AD15 AD17 AD18 AE9 AE10 AE12 AE13 AE15 AE17 AE18 AE20 AF9 AF10 AF12 AF14 AF15 AF17 AF18 AF20

(CPU IO POWER 1.05V)

=PP1V05_S0_CPU 7C7 9B5 9B6 9C5 9D5 11A3 12B3 12C5

4500 mA (before VCC stable)
2500 mA (after VCC stable)

VCCP: G21 V6 J6 K6 M6 J21 K21 M21 N21 N6 R21 R6 T21 T6 V21 W21

(CPU INTERNAL PLL POWER 1.5V)

=PP1V5_S0_CPU 7C7 11B3

130 mA

VCCA: B26 C26

VID0	AD6	CPU_VID<0>	OUT 59C7 70A3
VID1	AF5	CPU_VID<1>	OUT 59C7 70A3
VID2	AE5	CPU_VID<2>	OUT 59C7 70A3
VID3	AF4	CPU_VID<3>	OUT 59C7 70A3
VID4	AE3	CPU_VID<4>	OUT 59C7 70A3
VID5	AF3	CPU_VID<5>	OUT 59C7 70A3
VID6	AE2	CPU_VID<6>	OUT 59C7 70A3
VCCSENSE	AF7	CPU_VCCSENSE_P	OUT 59A4 59A5 70A3
VSSSENSE	AE7	CPU_VCCSENSE_N	OUT 59A4 59A5 70A3

=PPVCORE_S0_CPU 7D7 10D7 11D7 48B3 48B5

R1100
100
1%
1/16W
MF-LF
402

PLACEMENT_NOTE=Place within 1 inch of CPU, no stub.

R1101
100
1%
1/16W
MF-LF
402

PLACEMENT_NOTE=Place within 1 inch of CPU, no stub.

OMIT
U1000
MEROM
FCBGA
4 OF 4

VSS: A4 A8 A11 A14 A16 A19 A23 AF2 B6 B8 B11 B13 B16 B19 B21 B24 C5 C8 C11 C14 C16 C19 C2 C22 C25 D1 D4 D8 D11 D13 D16 D19 D23 D26 E3 E6 E8 E11 E14 E16 E19 E21 E24 F5 F8 F11 F13 F16 F19 F2 F22 F25 G4 G1 G23 G26 H3 H6 H21 H24 J2 J5 J22 J25 K1 K4 K23 K26 L3 L6 L21 L24 M2 M5 M22 M25 N1 N4 N23 N26 P3

VSS: P6 P21 P24 R2 R5 R22 R25 T1 T4 T23 T26 U3 U6 U21 U24 V2 V5 V22 V25 W1 W4 W23 W26 Y3 Y6 Y21 Y24 AA2 AA5 AA8 AA11 AA14 AA16 AA19 AA22 AA25 AB1 AB4 AB8 AB11 AB13 AB16 AB19 AB23 AB26 AC3 AC6 AC8 AC11 AC14 AC16 AC19 AC21 AC24 AD2 AD5 AD8 AD11 AD13 AD16 AD19 AD22 AD25 AE1 AE4 AE8 AE11 AE14 AE16 AE19 AE23 AE26 A2 AF6 AF8 AF11 AF13 AF16 AF19 AF21 A25 AF25

Preliminary

CPU Power & Ground

SYNC_MASTER=T9_MLB_NOME SYNC_DATE=11/12/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	11	106

Current numbers from Merom for Santa Rosa EMTS, doc #22221.

WWW.AliSaler.Com

CPU VCORE HF AND BULK DECOUPLING

4x 330uF. 20x 10uF 0805

4885 4883 16D7 10B5 7D7 =PPVCORE_S0_CPU

LAYOUT NOTE:
PLACE INSIDE SOCKET CAVITY (ON BOTTOMSIDE)

CRITICAL C1200 10UF 10% 6.3V X5R 805-2
CRITICAL C1201 10UF 10% 6.3V X5R 805-2
CRITICAL C1202 10UF 10% 6.3V X5R 805-2
CRITICAL C1203 10UF 10% 6.3V X5R 805-2
CRITICAL C1204 10UF 10% 6.3V X5R 805-2
CRITICAL C1205 10UF 10% 6.3V X5R 805-2
CRITICAL C1206 10UF 10% 6.3V X5R 805-2
CRITICAL C1207 10UF 10% 6.3V X5R 805-2
CRITICAL C1208 10UF 10% 6.3V X5R 805-2
CRITICAL C1209 10UF 10% 6.3V X5R 805-2

LAYOUT NOTE:
PLACE INSIDE SOCKET CAVITY (ON BOTTOMSIDE)

CRITICAL C1210 10UF 10% 6.3V X5R 805-2
CRITICAL C1211 10UF 10% 6.3V X5R 805-2
CRITICAL C1212 10UF 10% 6.3V X5R 805-2
CRITICAL C1213 10UF 10% 6.3V X5R 805-2
CRITICAL C1214 10UF 10% 6.3V X5R 805-2
CRITICAL C1215 10UF 10% 6.3V X5R 805-2
CRITICAL C1216 10UF 10% 6.3V X5R 805-2
CRITICAL C1217 10UF 10% 6.3V X5R 805-2
CRITICAL C1218 10UF 10% 6.3V X5R 805-2
CRITICAL C1219 10UF 10% 6.3V X5R 805-2

LAYOUT NOTE:
PLACE ON BOTTOMSIDE

CRITICAL C1250 330UF 10% 2.5V TANT D2T
CRITICAL C1251 330UF 10% 2.5V TANT D2T
CRITICAL C1252 330UF 10% 2.5V TANT D2T
CRITICAL C1253 330UF 10% 2.5V TANT D2T

LAYOUT NOTE:
PLACE ON BOTTOMSIDE

C1250, C1251, C1252 AND C1253 NEED TO USE 6mOHM CAPS.

VCCA (CPU AVdd) DECOUPLING

1087 7C7 =PP1V5_S0_CPU

1x 10uF, 1x 0.01uF

C1280 10uF 20% 6.3V X5R 603
C1281 0.01UF 10% 16V CERM 402

LAYOUT NOTE:
PLACE C1281 NEAR PIN B26 OF U1000

VCCP (CPU I/O) DECOUPLING

12C5 12B3 10C7 9D5 9C5 9B6 9B5 7C7 =PP1V05_S0_CPU

1X 330UF, 6X 0.1UF

CRITICAL C1235 330UF 20% 2.5V TANT D2T
C1236 0.1UF 20% 10V CERM 402
C1237 0.1UF 20% 10V CERM 402
C1238 0.1UF 20% 10V CERM 402
C1239 0.1UF 20% 10V CERM 402
C1240 0.1UF 20% 10V CERM 402
C1241 0.1UF 20% 10V CERM 402

LAYOUT NOTE:
PLACE C1235 CLOSE TO CPU

Preliminary

CPU Decoupling & VID

SYNC_MASTER=MSARWAR SYNC_DATE=04/26/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

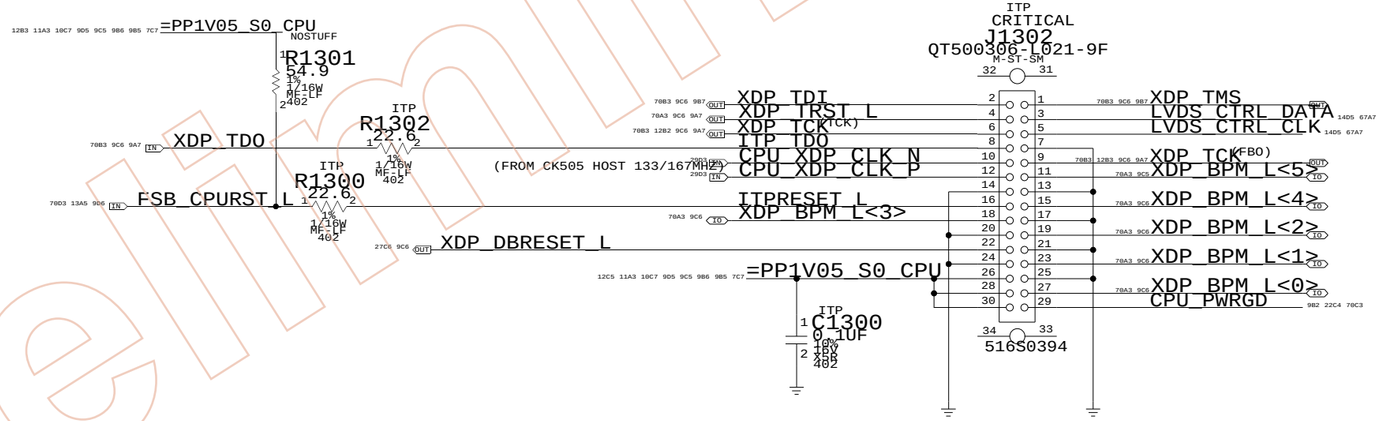
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE SHT 12 OF 106

WWW.AliSaler.Com

CPU ITP700FLEX DEBUG SUPPORT



(DBA#) INDICATE THAT ITP IS USING TAP I/F, NC IN 965GM CHIPSET SYSTEM.
(DEBUG PORT ACTIVE)
(DBR#) TO ICH8M SYS_RST*, AND WITH SYSTEM RESET LOGIC
(DEBUG PORT RESET)

ITP TCK SIGNAL LAYOUT NOTE:
ROUTE THE TCK SIGNAL FROM ITP700FLEX CONNECTOR'S TCK PIN TO CPU'S TCK PIN AND THEN FORK BACK FROM CPU TCK PIN AND ROUTE BACK TO ITP700FLEX CONNECTOR'S FBO PIN.

CPU ITP700FLEX DEBUG

SYNC_MASTER=MASTER SYNC_DATE=5/23/05

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

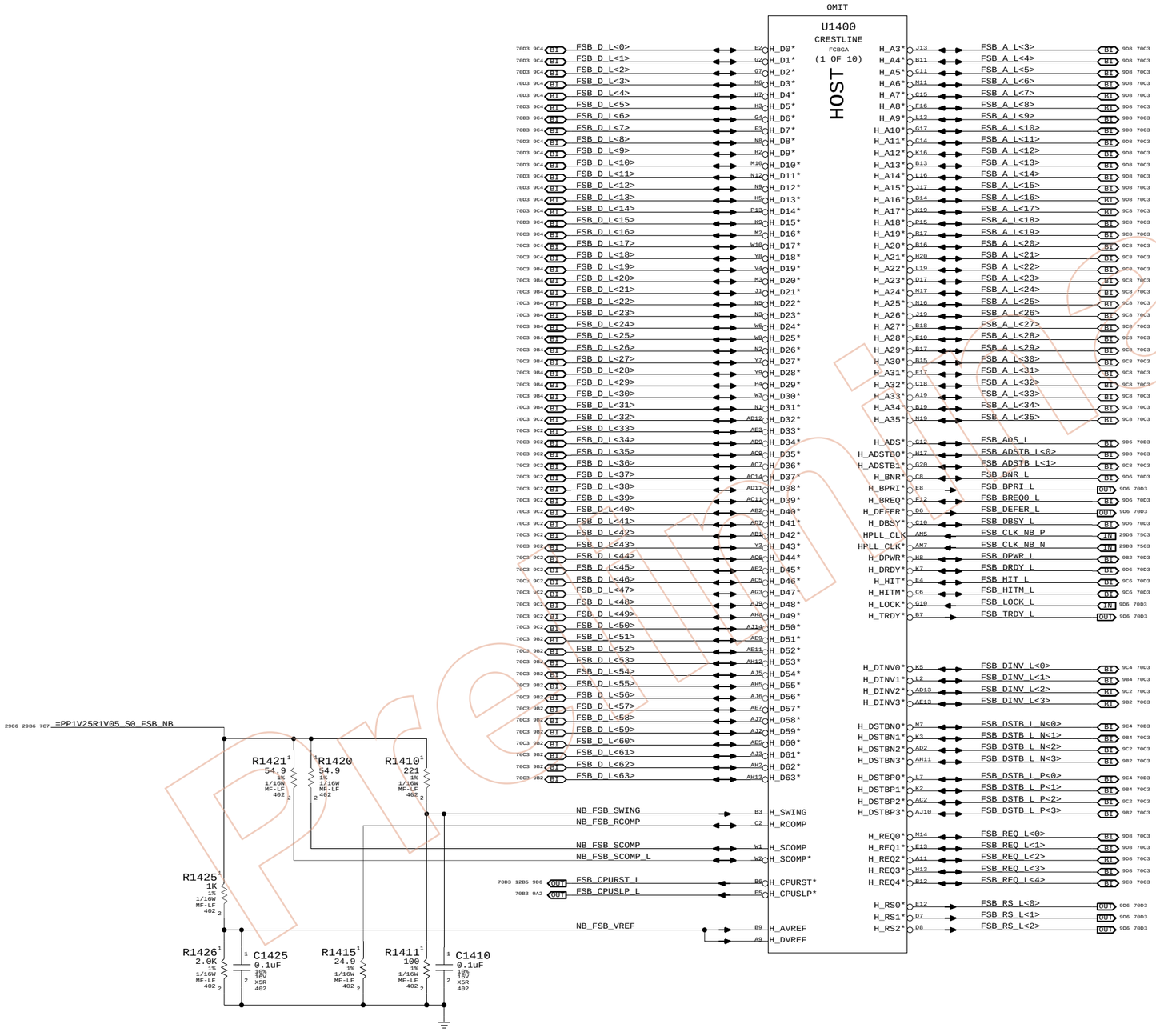
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 13 OF 106	

Preliminary

WWW.AliSaler.Com



Preliminary

NB CPU Interface

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 14 OF 106	

WWW.AliSaler.Com

LVDS Disable

Can leave all signals NC if LVDS is not implemented.
Tie VCC_TX_LVDS and VCCA_LVDS to GND.

If SDVO is used, VCCD_LVDS must remain powered with proper decoupling. Otherwise, tie VCCD_LVDS to GND also.

TV-Out Signal Usage:

Composite: DACA only
S-Video: DACB & DACC only
Component: DACA, DACB & DACC

Unused DAC outputs must remain powered, but can omit filtering components. Unused DAC outputs should connect to GND through 75-ohm resistors.

TV-Out Disable / CRT Enable

Tie TVx_DAC and TVx_RTN to GND. Must power all TVDAC rails. VCCA_TVx_DAC and VCCA_DAC_BG can share filtering with VCCA_CRT_DAC.

CRT Disable / TV-Out Enable

Tie R/R#/G/G#/B/B#, HSYNC and VSYNC to GND.
All CRT/TVDAC rails must be powered. All rails must be filtered except for VCCA_CRT.

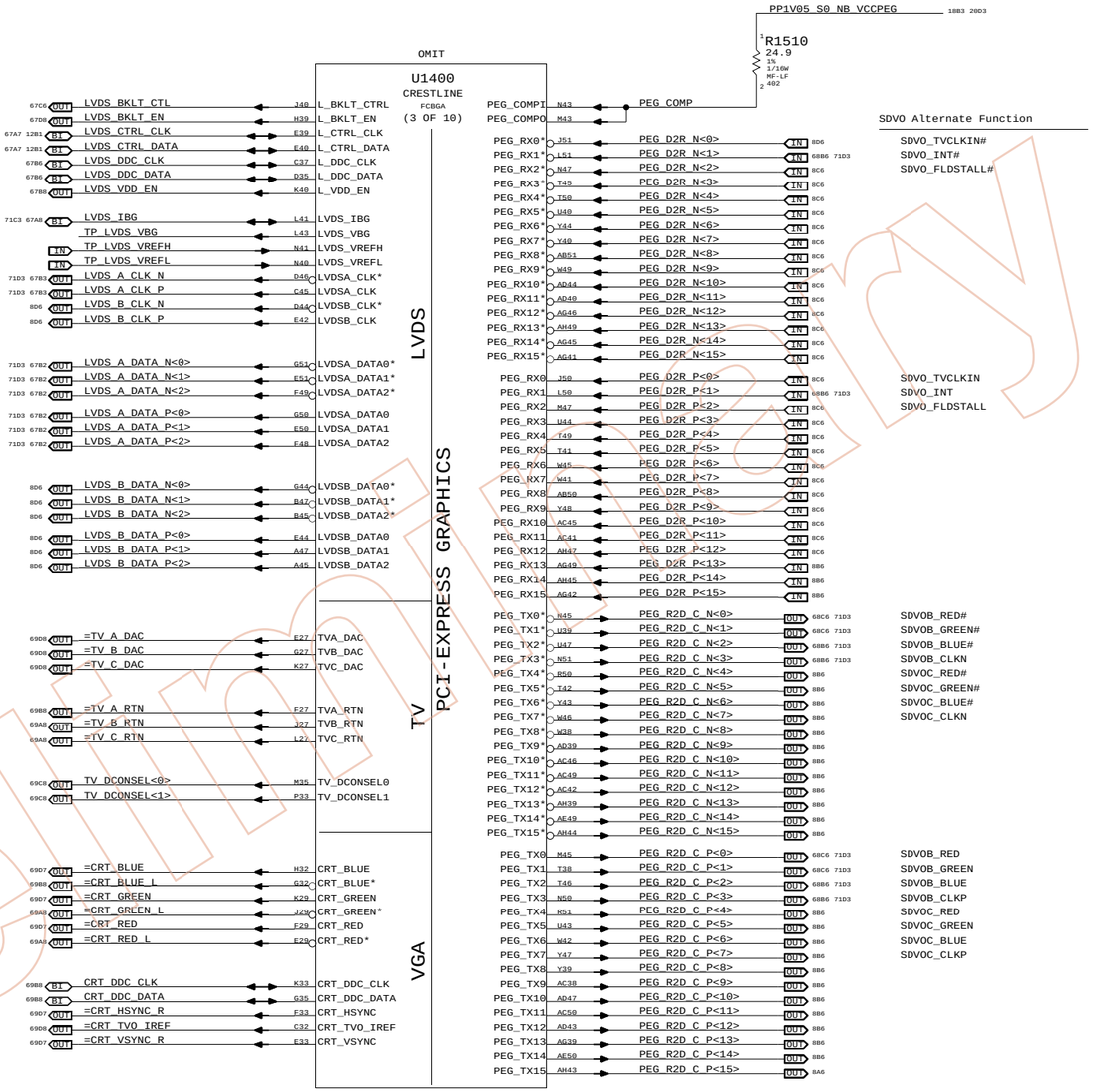
CRT & TV-Out Disable

Tie TVx_DAC, TVx_RTN, R/R#/G/G#/B/B#, HSYNC, VSYNC and CRT_TVO_IREF to GND.
Can tie the following rails to GND:
VCCA_CRT_DAC, VCCA_DAC_BG, VCCA_TVx_DAC, VCCD_CRT, VCCD_QDAC and VCC_SYNC.

NOTE: Must keep VDDC_TVDAC powered and filtered at all times!

Internal Graphics Disable

Follow instructions for LVDS and CRT & TV-Out Disable above.
Can also tie CRT_DDC_*, L_CTRL_*, L_DDC_*, SDVO_CTRL_* and TV_DCONSELx to GND.
Tie DPLL_REF_CLK and DPLL_REF_SSCLK to GND.
Tie DPLL_REF_CLK* and DPLL_REF_SSCLK* to VCC (VCore).
Tie VCCA_DPLLA and VCCA_DPLLB to VCC (VCore).
Tie VCC_AXG and VCC_AXG_NCTF to GND.
Leave GFX_VID<3..0> and GFX_VR_EN as NC.



NB PEG / Video Interfaces

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 15 OF 106	

Preliminary

WWW.AliSaler.Com

NB_CFG<3>	RESERVED
NB_CFG<4>	RESERVED
NB_CFG<5> DMI x2 Select	High = DMIx4 Low = DMIx2
NB_CFG<6>	RESERVED
NB_CFG<7>	RESERVED
NB_CFG<8>	RESERVED
NB_CFG<9> PCIe Graphics Lane Reversal	High = Normal Low = Reversed
NB_CFG<10>	RESERVED
NB_CFG<11>	RESERVED
NB_CFG<12>	See Below
NB_CFG<13>	See Below
NB_CFG<14>	RESERVED
NB_CFG<15>	RESERVED
NB_CFG<16> FSB Dynamic ODT	High = Enabled Low = Disabled
NB_CFG<17>	RESERVED
NB_CFG<18>	RESERVED
NB_CFG<19> DMI Lane Reversal	High = Reversed Low = Normal
NB_CFG<20> Concurrent SDVO/PCIe x1	High = Both active Low = Only SDVO or PCIe x16

NB_CFG<13:12>

00 = RESERVED
01 = XOR Mode Enabled
10 = All-Z Mode Enabled
11 = Normal Operation

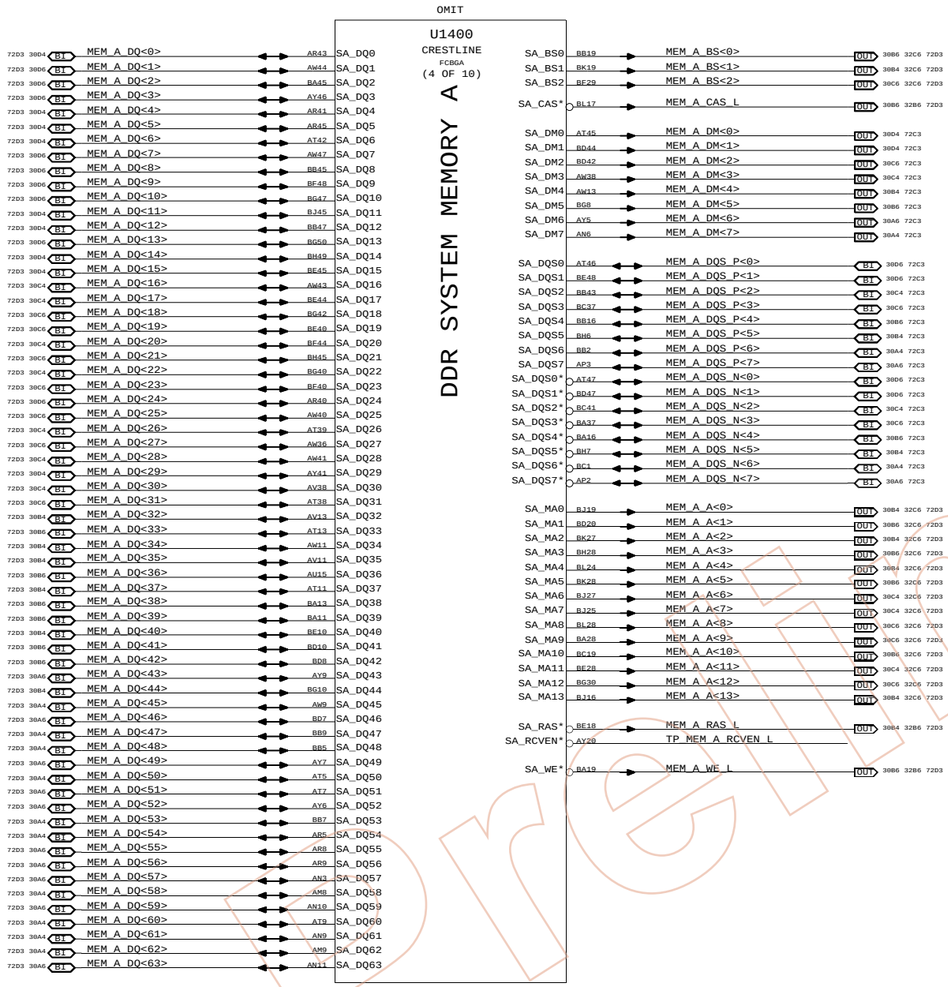
NB CFG<8:0> used for debug access

NB CFG<13:12> require ICT access

NOTE: GMCH CL_PWROK input must be PWRGD signal for PP3V3_S0M, PP3V3_S0MWOL, PP1V8_S3M, PP1V25_S0M, PP1V05_S0M, PP0V9_S3M and PP0V9_S0M.
If ME/AMT is not used, short CL_PWROK to PWROK.

NB Misc Interfaces		
SYNC_MASTER=T9_MLB	SYNC_DATE=10/30/2006	
NOTICE OF PROPRIETARY PROPERTY		
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING I TO MAINTAIN THE DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART		
APPLE INC.	SIZE: D	DRAWING NUMBER: 051-7559
	REV: H	
	SCALE: NONE	SHT: 16 OF 106

WWW.AliSaler.Com



Preliminary

NB DDR2 Interfaces

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

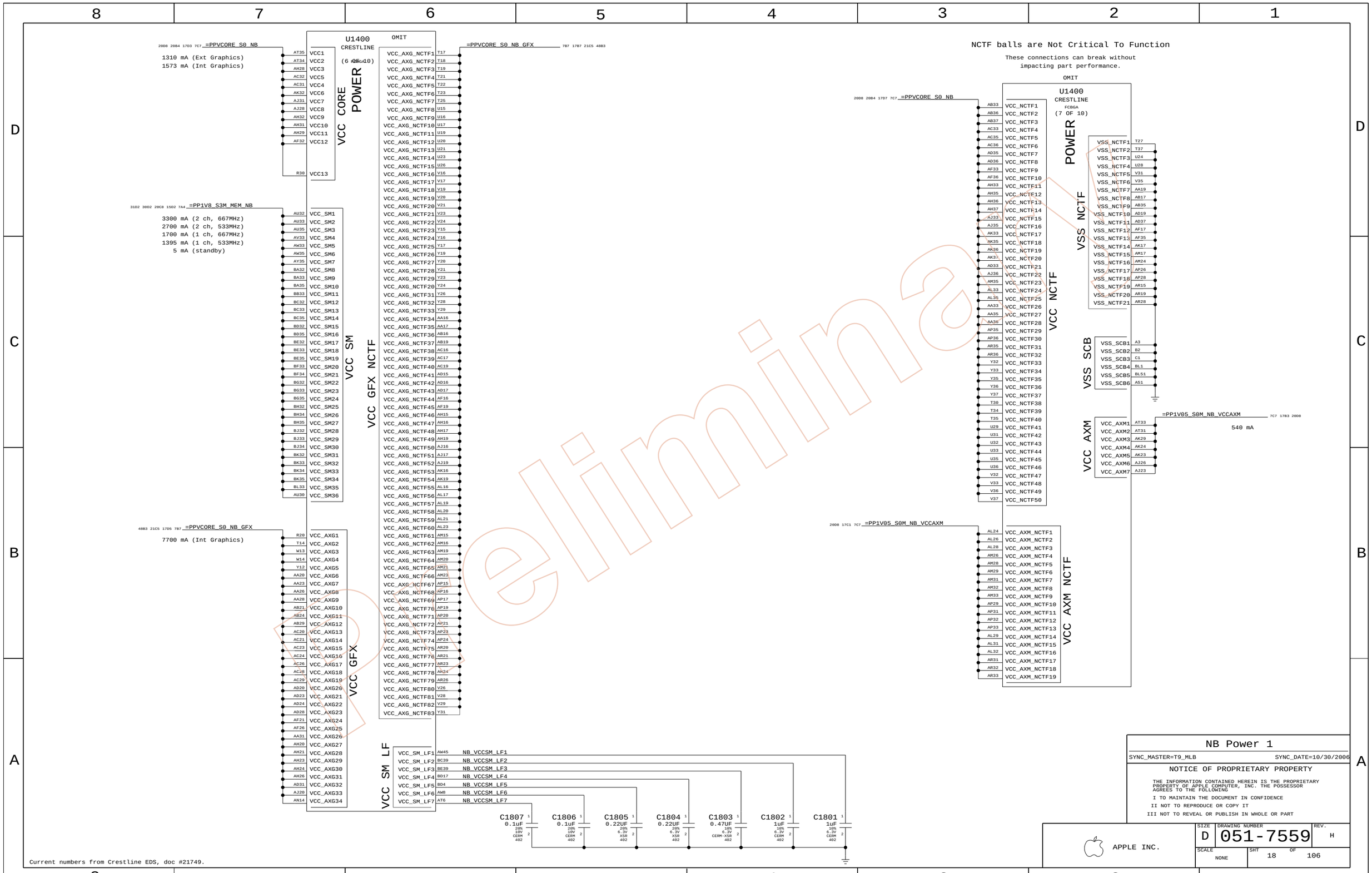
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

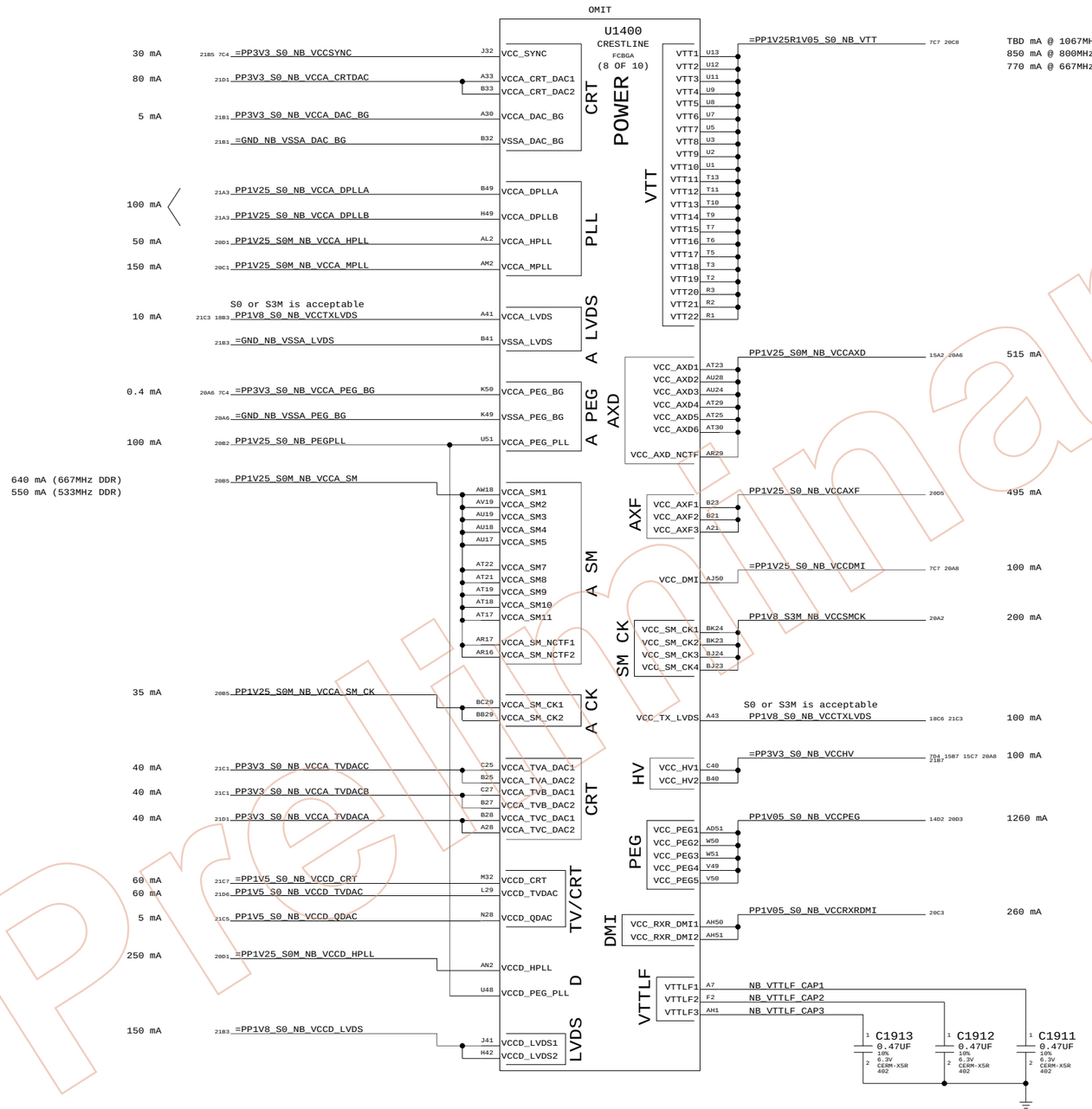
SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	17	106

WWW.AliSaler.Com


U1400
CRESTLINE
FCBGA
(7 OF 10)
OMIT
=PPVCORE_S0_NB
1310 mA (Ext Graphics)
1573 mA (Int Graphics)
VCC CORE POWER
VCC1 VCC2 VCC3 VCC5 VCC4 VCC6 VCC7 VCC8 VCC9 VCC10 VCC11 VCC12 VCC13
=PPV1V8_S3M_MEM_NB
3300 mA (2 ch, 667MHz)
2700 mA (2 ch, 533MHz)
1700 mA (1 ch, 667MHz)
1395 mA (1 ch, 533MHz)
5 mA (standby)
VCC SM
VCC_SM1 VCC_SM2 VCC_SM3 VCC_SM4 VCC_SM5 VCC_SM6 VCC_SM7 VCC_SM8 VCC_SM9 VCC_SM10 VCC_SM11 VCC_SM12 VCC_SM13 VCC_SM14 VCC_SM15 VCC_SM16 VCC_SM17 VCC_SM18 VCC_SM19 VCC_SM20 VCC_SM21 VCC_SM22 VCC_SM23 VCC_SM24 VCC_SM25 VCC_SM26 VCC_SM27 VCC_SM28 VCC_SM29 VCC_SM30 VCC_SM31 VCC_SM32 VCC_SM33 VCC_SM34 VCC_SM35 VCC_SM36
=PPVCORE_S0_NB_GFX
7700 mA (Int Graphics)
VCC GFX
VCC_AXG1 VCC_AXG2 VCC_AXG3 VCC_AXG4 VCC_AXG5 VCC_AXG6 VCC_AXG7 VCC_AXG8 VCC_AXG9 VCC_AXG10 VCC_AXG11 VCC_AXG12 VCC_AXG13 VCC_AXG14 VCC_AXG15 VCC_AXG16 VCC_AXG17 VCC_AXG18 VCC_AXG19 VCC_AXG20 VCC_AXG21 VCC_AXG22 VCC_AXG23 VCC_AXG24 VCC_AXG25 VCC_AXG26 VCC_AXG27 VCC_AXG28 VCC_AXG29 VCC_AXG30 VCC_AXG31 VCC_AXG32 VCC_AXG33 VCC_AXG34
VCC GFX NCTF
VCC_AXG_NCTF1 VCC_AXG_NCTF2 VCC_AXG_NCTF3 VCC_AXG_NCTF4 VCC_AXG_NCTF5 VCC_AXG_NCTF6 VCC_AXG_NCTF7 VCC_AXG_NCTF8 VCC_AXG_NCTF9 VCC_AXG_NCTF10 VCC_AXG_NCTF11 VCC_AXG_NCTF12 VCC_AXG_NCTF13 VCC_AXG_NCTF14 VCC_AXG_NCTF15 VCC_AXG_NCTF16 VCC_AXG_NCTF17 VCC_AXG_NCTF18 VCC_AXG_NCTF19 VCC_AXG_NCTF20 VCC_AXG_NCTF21 VCC_AXG_NCTF22 VCC_AXG_NCTF23 VCC_AXG_NCTF24 VCC_AXG_NCTF25 VCC_AXG_NCTF26 VCC_AXG_NCTF27 VCC_AXG_NCTF28 VCC_AXG_NCTF29 VCC_AXG_NCTF30 VCC_AXG_NCTF31 VCC_AXG_NCTF32 VCC_AXG_NCTF33 VCC_AXG_NCTF34 VCC_AXG_NCTF35 VCC_AXG_NCTF36 VCC_AXG_NCTF37 VCC_AXG_NCTF38 VCC_AXG_NCTF39 VCC_AXG_NCTF40 VCC_AXG_NCTF41 VCC_AXG_NCTF42 VCC_AXG_NCTF43 VCC_AXG_NCTF44 VCC_AXG_NCTF45 VCC_AXG_NCTF46 VCC_AXG_NCTF47 VCC_AXG_NCTF48 VCC_AXG_NCTF49 VCC_AXG_NCTF50 VCC_AXG_NCTF51 VCC_AXG_NCTF52 VCC_AXG_NCTF53 VCC_AXG_NCTF54 VCC_AXG_NCTF55 VCC_AXG_NCTF56 VCC_AXG_NCTF57 VCC_AXG_NCTF58 VCC_AXG_NCTF59 VCC_AXG_NCTF60 VCC_AXG_NCTF61 VCC_AXG_NCTF62 VCC_AXG_NCTF63 VCC_AXG_NCTF64 VCC_AXG_NCTF65 VCC_AXG_NCTF66 VCC_AXG_NCTF67 VCC_AXG_NCTF68 VCC_AXG_NCTF69 VCC_AXG_NCTF70 VCC_AXG_NCTF71 VCC_AXG_NCTF72 VCC_AXG_NCTF73 VCC_AXG_NCTF74 VCC_AXG_NCTF75 VCC_AXG_NCTF76 VCC_AXG_NCTF77 VCC_AXG_NCTF78 VCC_AXG_NCTF79 VCC_AXG_NCTF80 VCC_AXG_NCTF81 VCC_AXG_NCTF82 VCC_AXG_NCTF83
=PPVCORE_S0_NB_GFX
VCC SM LF
VCC_SM_LF1 VCC_SM_LF2 VCC_SM_LF3 VCC_SM_LF4 VCC_SM_LF5 VCC_SM_LF6 VCC_SM_LF7
NB_VCCSM_LF1 NB_VCCSM_LF2 NB_VCCSM_LF3 NB_VCCSM_LF4 NB_VCCSM_LF5 NB_VCCSM_LF6 NB_VCCSM_LF7
C1807 0.1uF 20% 10V CERM 402
C1806 0.1uF 20% 10V CERM 402
C1805 0.22UF 20% 6.3V X5R 402
C1804 0.22UF 20% 6.3V X5R 402
C1803 0.47UF 10% 6.3V CERM-X5R 402
C1802 1uF 10% 6.3V CERM 402
C1801 1uF 10% 6.3V CERM 402
NCTF balls are Not Critical To Function
These connections can break without impacting part performance.
OMIT
U1400
CRESTLINE
FCBGA
(7 OF 10)
=PPVCORE_S0_NB
VCC NCTF
VCC_NCTF1 VCC_NCTF2 VCC_NCTF3 VCC_NCTF4 VCC_NCTF5 VCC_NCTF6 VCC_NCTF7 VCC_NCTF8 VCC_NCTF9 VCC_NCTF10 VCC_NCTF11 VCC_NCTF12 VCC_NCTF13 VCC_NCTF14 VCC_NCTF15 VCC_NCTF16 VCC_NCTF17 VCC_NCTF18 VCC_NCTF19 VCC_NCTF20 VCC_NCTF21 VCC_NCTF22 VCC_NCTF23 VCC_NCTF24 VCC_NCTF25 VCC_NCTF26 VCC_NCTF27 VCC_NCTF28 VCC_NCTF29 VCC_NCTF30 VCC_NCTF31 VCC_NCTF32 VCC_NCTF33 VCC_NCTF34 VCC_NCTF35 VCC_NCTF36 VCC_NCTF37 VCC_NCTF38 VCC_NCTF39 VCC_NCTF40 VCC_NCTF41 VCC_NCTF42 VCC_NCTF43 VCC_NCTF44 VCC_NCTF45 VCC_NCTF46 VCC_NCTF47 VCC_NCTF48 VCC_NCTF49 VCC_NCTF50
VSS NCTF
VSS_NCTF1 VSS_NCTF2 VSS_NCTF3 VSS_NCTF4 VSS_NCTF5 VSS_NCTF6 VSS_NCTF7 VSS_NCTF8 VSS_NCTF9 VSS_NCTF10 VSS_NCTF11 VSS_NCTF12 VSS_NCTF13 VSS_NCTF14 VSS_NCTF15 VSS_NCTF16 VSS_NCTF17 VSS_NCTF18 VSS_NCTF19 VSS_NCTF20 VSS_NCTF21
VSS SCB
VSS_SCB1 VSS_SCB2 VSS_SCB3 VSS_SCB4 VSS_SCB5 VSS_SCB6
=PP1V05_S0M_NB_VCCAXM
540 mA
VCC AXM
VCC_AXM1 VCC_AXM2 VCC_AXM3 VCC_AXM4 VCC_AXM5 VCC_AXM6 VCC_AXM7
=PP1V05_S0M_NB_VCCAXM
VCC AXM NCTF
VCC_AXM_NCTF1 VCC_AXM_NCTF2 VCC_AXM_NCTF3 VCC_AXM_NCTF4 VCC_AXM_NCTF5 VCC_AXM_NCTF6 VCC_AXM_NCTF7 VCC_AXM_NCTF8 VCC_AXM_NCTF9 VCC_AXM_NCTF10 VCC_AXM_NCTF11 VCC_AXM_NCTF12 VCC_AXM_NCTF13 VCC_AXM_NCTF14 VCC_AXM_NCTF15 VCC_AXM_NCTF16 VCC_AXM_NCTF17 VCC_AXM_NCTF18 VCC_AXM_NCTF19
NB Power 1
SYNC_MASTER=T9_MLB
SYNC_DATE=10/30/2006
NOTICE OF PROPRIETARY PROPERTY
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART
APPLE INC.
SIZE D
DRAWING NUMBER 051-7559
REV. H
SCALE NONE
SHT 18 OF 106
Current numbers from Crestline EDS, doc #21749.

WWW.AliSaler.Com



Current numbers from Crestline EDS, doc #21749.

NB Power 2

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE D | DRAWING NUMBER 051-7559 | REV. H

SCALE NONE | SHT 19 OF 106

Preliminary
WWW.AliSaler.Com

OMIT

U1400
CRESTLINE
FCBGA
(9 OF 10)
VSS

A13	VSS1	VSS100	AW24		
A15	VSS2	VSS101	AW29		
A17	VSS3	VSS102	AW32		
A24	VSS4	VSS103	AW5		
AA21	VSS5	VSS104	AW7		
AA24	VSS6	VSS105	AY10		
AA29	VSS7	VSS106	AY24		
AB20	VSS8	VSS107	AY37		
AB23	VSS9	VSS108	AY42		
AB26	VSS10	VSS109	AY43		
AB28	VSS11	VSS110	AY45		
AB31	VSS12	VSS111	AY47		
AC10	VSS13	VSS112	AY50		
AC13	VSS14	VSS113	B10		
AC3	VSS15	VSS114	B20		
AC39	VSS16	VSS115	B24		
AC43	VSS17	VSS116	B29		
AC47	VSS18	VSS117	B30		
AD1	VSS19	VSS118	B35		
AD21	VSS20	VSS119	B38		
AD26	VSS21	VSS120	B43		
AD29	VSS22	VSS121	B46		
AD3	VSS23	VSS122	B5		
AD41	VSS24	VSS123	B8		
AD45	VSS25	VSS124	BA1		
AD49	VSS26	VSS125	BA17		
AD5	VSS27	VSS126	BA18		
AD50	VSS28	VSS127	BA2		
AD8	VSS29	VSS128	BA24		
AE10	VSS30	VSS129	BB12		
AE14	VSS31	VSS130	BB25		
AE6	VSS32	VSS131	BB40		
AF20	VSS33	VSS132	BB44		
AF23	VSS34	VSS133	BB49		
AF24	VSS35	VSS134	BB8		
AF31	VSS36	VSS135	BC16		
AG2	VSS37	VSS136	BC24		
AG38	VSS38	VSS137	BC25		
AG43	VSS39	VSS138	BC36		
AG47	VSS40	VSS139	BC40		
AG50	VSS41	VSS140	BC51		
AH3	VSS42	VSS141	BD13		
AH40	VSS43	VSS142	BD2		
AH41	VSS44	VSS143	BD28		
AH7	VSS45	VSS144	BD45		
AH9	VSS46	VSS145	BD48		
AJ11	VSS47	VSS146	BD5		
AJ13	VSS48	VSS147	BE1		
AJ21	VSS49	VSS148	BE19		
AJ24	VSS50	VSS149	BE23		
AJ29	VSS51	VSS150	BE30		
AJ32	VSS52	VSS151	BE42		
AJ43	VSS53	VSS152	BE51		
AJ45	VSS54	VSS153	BE8		
AJ49	VSS55	VSS154	BF12		
AK20	VSS56	VSS155	BF16		
AK21	VSS57	VSS156	BF36		
AK26	VSS58	VSS157	BG19		
AK28	VSS59	VSS158	BG2		
AK31	VSS60	VSS159	BG24		
AK51	VSS61	VSS160	BG29		
AL1	VSS62	VSS161	BG39		
AM11	VSS63	VSS162	BG48		
AM13	VSS64	VSS163	BG5		
AM3	VSS65	VSS164	BG51		
AM4	VSS66	VSS165	BH17		
AM41	VSS67	VSS166	BH30		
AM45	VSS68	VSS167	BH44		
AN1	VSS69	VSS168	BH46		
AN38	VSS70	VSS169	BH8		
AN39	VSS71	VSS170	BJ11		
AN43	VSS72	VSS171	BJ13		
AN5	VSS73	VSS172	BJ38		
AN7	VSS74	VSS173	BJ4		
AP4	VSS75	VSS174	BJ42		
AP48	VSS76	VSS175	BJ46		
AP50	VSS77	VSS176	BK15		
AR11	VSS78	VSS177	BK17		
AR2	VSS79	VSS178	BK25		
AR39	VSS80	VSS179	BK29		
AR44	VSS81	VSS180	BK36		
AR47	VSS82	VSS181	BK40		
AR7	VSS83	VSS182	BK44		
AT10	VSS84	VSS183	BK6		
AT14	VSS85	VSS184	BK8		
AT41	VSS86	VSS185	BL11		
AT49	VSS87	VSS186	BL13		
AU1	VSS88	VSS187	BL19		
AU23	VSS89	VSS188	BL22		
AU29	VSS90	VSS189	BL37		
AU3	VSS91	VSS190	BL47		
AU36	VSS92	VSS191	C12		
AU49	VSS93	VSS192	C16		
AU51	VSS94	VSS193	C19		
AV39	VSS95	VSS194	C28		
AV48	VSS96	VSS195	C29		
AW1	VSS97	VSS196	C33		
AW12	VSS98	VSS197	C36		
AW16	VSS99	VSS198	C41		

OMIT

U1400
CRESTLINE
FCBGA
(10 OF 10)
VSS

C46	VSS199	VSS287	W11		
C50	VSS200	VSS288	W39		
C7	VSS201	VSS289	W43		
D13	VSS202	VSS290	W47		
D24	VSS203	VSS291	W5		
D3	VSS204	VSS292	W7		
D32	VSS205	VSS293	Y13		
D39	VSS206	VSS294	Y2		
D45	VSS207	VSS295	Y41		
D49	VSS208	VSS296	Y45		
E10	VSS209	VSS297	Y49		
E16	VSS210	VSS298	Y5		
E24	VSS211	VSS299	Y50		
E28	VSS212	VSS300	Y11		
E32	VSS213	VSS301	P29		
E47	VSS214				
F19	VSS215				
F36	VSS216	TDE_SENSE	VSS302	T29	=NB_TDE_SENSE 8A2
F4	VSS217				NOTE: TDE = _P
F40	VSS218				
F50	VSS219	TDE_FORCE	VSS303	T31	=NB_TDE_FORCE 8A2
G1	VSS220				
G13	VSS221				
G16	VSS222	TDB_FORCE	VSS304	T33	=NB_TDB_FORCE 8A2
G19	VSS223				NOTE: TDB = _N
G24	VSS224				
G28	VSS225	TDB_SENSE	VSS305	R28	=NB_TDB_SENSE 8A2
G29	VSS226				
G33	VSS227				
G42	VSS228				
G45	VSS229	VSS306	AA32		
G48	VSS230	VSS307	AB32		
G8	VSS231	VSS308	AD32		
H24	VSS232	VSS309	AF28		
H28	VSS233	VSS310	AF29		
H4	VSS234	VSS311	AT27		
H45	VSS235	VSS312	AV25		
J11	VSS236	VSS313	H50		
J16	VSS237				
J2	VSS238				
J24	VSS239				
J28	VSS240				
J33	VSS241				
J35	VSS242				
J39	VSS243				
K12	VSS245				
K47	VSS246				
K8	VSS247				
L1	VSS248				
L17	VSS249				
L20	VSS250				
L24	VSS251				
L28	VSS252				
L3	VSS253				
L33	VSS254				
L49	VSS255				
M28	VSS256				
M42	VSS257				
M46	VSS258				
M49	VSS259				
M5	VSS260				
M50	VSS261				
M9	VSS262				
N11	VSS263				
N14	VSS264				
N17	VSS265				
N29	VSS266				
N32	VSS267				
N36	VSS268				
N39	VSS269				
N44	VSS270				
N49	VSS271				
N7	VSS272				
P19	VSS273				
P2	VSS274				
P23	VSS275				
P3	VSS276				
P50	VSS277				
R49	VSS278				
T39	VSS279				
T43	VSS280				
T47	VSS281				
U41	VSS282				
U45	VSS283				
U50	VSS284				
V2	VSS285				
V3	VSS286				

Crestline Thermal Diode Pins

Mainly for investigation. If not used, alias these nets directly to GND.

NB Grounds

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	20	106

Preliminary

WWW.AliSaler.Com

GMCH Core Power

=PPVCORE_S0_NB

CRITICAL
C2100 470UF 20% 2.5V POLY TANT D2T

C2101 22UF 20% 6.3V CERM 805
C2102 0.22UF 20% 6.3V X5R 402
C2103 0.22UF 20% 6.3V X5R 402
C2104 0.1UF 20% 10V CERM 402

PLACEMENT_NOTE=Place in GMCH cavity

GMCH ME Core Power

=PP1V05_S0M_NB_VCCAXM

540 mA

C2110 22UF 20% 6.3V CERM 805
C2111 0.22UF 20% 6.3V X5R 402
C2112 0.22UF 20% 6.3V X5R 402
C2113 0.1UF 20% 10V CERM 402
C2114 0.1UF 20% 10V CERM 402
C2115 0.1UF 20% 10V CERM 402

GMCH FSB I/O Rail

=PP1V25R1V05_S0_NB_VTT

850 mA

C2121 4.7uF 20% 6.3V CERM 603
C2122 4.7uF 20% 6.3V CERM 603
C2123 2.2uF 20% 6.3V CERM1 603
C2124 0.47UF 10% 6.3V CERM-X5R 402

PLACEMENT_NOTE=Place close to U1400

WF: Matanzas has 270uF

GMCH Memory I/O Rail

=PP1V8_S3M_MEM_NB

2400 mA

OMIT
CRITICAL
C2130 330UF 20% 2.5V POLY CASE-C2

C2135 0.1UF 20% 10V CERM 402
C2131 22UF 20% 6.3V CERM 805
C2132 22UF 20% 6.3V CERM 805

this is "1 of 2" 1.8V bulk decoupling caps.

PLACEMENT_NOTE=Place close to U1400
WF: "Place where LVDS and DDR2 taps." (C2125)

I/O voltage Supply

=PP1V25_S0_NB_VCCAXF_S =PP1V25_S0_NB_VCCAXF

MIN_LINE_WIDTH=0.4 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.25V

350 mA

C2170 10uF 20% 6.3V X5R 603
C2171 1UF 10% 6.3V CERM 402

CRITICAL
L2173 91NH 1210

=PP1V05_S0_NB_PCIE

1450 mA

Layout Note:
Place L and C
close to MCH

Analog,I/O logic,and Term Voltage for PCI-E Graphics

PP1V05_S0_NB_VCCPEG

MIN_LINE_WIDTH=0.5 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.05V

1200 mA

OMIT
CRITICAL
C2173 220UF 20% 2.5V POLY CASE-B2

C2174 10uF 20% 6.3V X5R 603

Layout Note:
10uF caps should
be close to MCH
on opposite side.

RX and I/O Logic for DMI

PP1V05_S0_NB_VCCRXRDMI

MIN_LINE_WIDTH=0.2 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.05V

250 mA

C2177 10uF 20% 6.3V X5R 603

Layout Note:
10uF caps should
be close to MCH
on opposite side.

Host PLL Digital Supply

=PP1V25_S0M_NB_VCCD_HPLL

250 mA

C2180 0.1UF 20% 10V CERM 402

=PP1V25_S0_NB_PLL

450 mA

250mA,0.5ohm
L2181 120-OHM-0.3A-EMI 0402-LF

Host PLL Analog Supply

PP1V25_S0M_NB_VCCA_HPLL

MIN_LINE_WIDTH=0.25 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.25V

50 mA

C2181 22UF 20% 6.3V CERM 805
C2182 0.1UF 20% 10V CERM 402

250mA,0.5ohm
L2183 120-OHM-0.3A-EMI 0402-LF

MPLL Analog Supply

PP1V25_S0M_NB_VCCA_MPLL

MIN_LINE_WIDTH=0.5 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.25V

150 mA

R2183 0.51 1% 1/10W MF-LF 402

C2184 0.1UF 20% 10V CERM 402

PLACEMENT_NOTE=Place C2184 by U1400.AM2

PP1V25_S0M_NB_MPLL_RC

MIN_LINE_WIDTH=0.3 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.25V

C2183 22UF 20% 6.3V CERM 805

These supplies are still needed even using external GPU

Memory I/O logic and DLL voltage.

=PP1V25_S0_NB_VCCA

??? mA

R2141 0 5% 1/16W MF-LF 402

OMIT
CRITICAL
C2140 330UF 20% 2.0V POLY CASE-B2

C2142 22UF 20% 6.3V CERM 805
C2143 4.7UF 10% 6.3V X5R-CERM 603

PP1V25_S0M_NB_VCCA_SM

MIN_LINE_WIDTH=0.4 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.25V

??? mA

C2144 1UF 10% 6.3V CERM 402

Memory clock logic voltage.

R2145 0 5% 1/16W MF-LF 402

C2145 22UF 20% 6.3V CERM 805
NOSTUFF
C2147 2.2UF 20% 6.3V CERM 402-LF

PP1V25_S0M_NB_VCCA_SM_CK

MIN_LINE_WIDTH=0.4 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.25V

??? mA

C2148 0.1UF 20% 10V CERM 402

5.6nH,0.9A,45mohm max.no bigger than 0603

Memory voltage supply.

=PP1V25_S0_NB_VCC

200 mA

R2109 0 5% 1/16W MF-LF 402

PP1V25_S0M_NB_VCCAXD

MIN_LINE_WIDTH=0.4 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.25V

200 mA

NOSTUFF
C2150 10uF 20% 6.3V X5R 603

C2151 1UF 10% 6.3V CERM 402

=PP1V8_S3_MEMVREF

=PP1V8_S3_MEMVREF

R2112 1K 1% 1/16W MF-LF 402
R2110 1K 1% 1/16W MF-LF 402

MAKE_BASE=TRUE
MIN_LINE_WIDTH=0.4 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=0.9V

=PP0V9_S3M_MEM_NBVREFA

=PP0V9_S3M_MEM_NBVREFA

=PP0V9_S3M_MEM_NBVREFB

R2113 1K 1% 1/16W MF-LF 402
R2111 1K 1% 1/16W MF-LF 402

LAYOUT NOTE: PLACE THOSE COMPONENT CLOSE TO GMCH

D2186 1SS418 SOD-723

=PPVCORE_S0_NB

PP3V3_S0_NBCORE_FOLLOW_R

MIN_LINE_WIDTH=0.4 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=3.3V

R2186 10 1% 1/16W MF-LF 402

=PP3V3_S0_NB_FOLLOW

NOTE: This follower is redundant if VCORE is always 1.05V.

WF: 220-ohm

L2190 FERR-220-OHM-2.5A 0603

Analog PLL Voltage for PCI-E GPU

=PP1V25_S0_NB_PLL

100 mA

PP1V25_S0_NB_PEGPLL

MIN_LINE_WIDTH=0.25 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.25V

100 mA

R2190 1.1 1% 1/16W MF-LF 402

C2191 0.1UF 20% 10V CERM 402
C2192 0.1UF 20% 10V CERM 402

WF: Should be 1.0, 1%

PP1V25_S0_NB_PEGPLL_RC

MIN_LINE_WIDTH=0.25 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.25V

C2190 10uF 20% 6.3V X5R 603

need to find "1uH,220mA,150mohm max"

L2195 1.0UH-0.23A 0603

200 mA =PP1V8_S3_NB_VCC

PP1V8_S3_NB_VCCSMCK

MIN_LINE_WIDTH=0.25 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.8V

200 mA

R2195 1.1 1% 1/16W MF-LF 402

C2196 22UF 20% 6.3V CERM 805
C2197 0.1UF 20% 10V CERM 402

WF: Should be 1.0, 1%

PP1V8_S3_NB_VCCSMCK_RC

MIN_LINE_WIDTH=0.25 MM
MIN_NECK_WIDTH=0.2 MM
VOLTAGE=1.8V

C2195 10UF 20% 6.3V X5R 603

100 mA =PP3V3_S0_NB_VCCHV

100 mA =PP1V25_S0_NB_VCCDMI

C2160 0.1UF 20% 10V CERM 402
C2161 0.1UF 20% 10V CERM 402

=PP3V3_S0_NB_VCCA_PEG_BG

C2165 0.1UF 20% 10V CERM 402

5 mA

=GND_NB_VSSA_PEG_BG

Layout Note: Route to caps, then GND

Current numbers from Crestline EDS Addendum, doc #20127.

NB Standard Decoupling

SYNC_MASTER=WFERRY SYNC_DATE=06/15/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 21 OF 106	

WWW.AliSaler.Com

NOTE: This filter is required even if using only external graphics.
VCCD_TVDAC also powers internal thermal sensors.

=PP1V5_S0_NB_TVDAC
65 mA
R2205 100 5% 1/16W MF-LF 402
CRITICAL C2201 22000pF-1000mA 16V NPM18
C2200 0.1UF 20% 16V X5R 402
PP1V5_S0_NB_VCCD_TVDAC
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.5V
60 mA
PP1V5_S0_NB_VCCD_CRT
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.5V
6 mA
=PP1V5_S0_NB_VCCD_CRT
PP1V5_S0_NB_VCCD_CRT
MAKE_BASE=TRUE

PP1V5_S0_NB_QDAC
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.5V
CRITICAL C2206 22000pF-1000mA 16V NPM18
C2205 1UF 10% 16V X5R 402-1
PP1V5_S0_NB_VCCD_QDAC
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.5V
5 mA
C2207 0.1UF 20% 16V CERM 402
Layout Note: These 4 caps should be within 6.35 mm of NB edge

=PP5V_S0_NB_TVDAC
205 mA
C2280 1UF 10% 6.3V CERM 402
R2281 0 5% 1/16W MF-LF 402
P3V3TVDAC_EN_R
NO STUFF C2281 1UF 10% 16V CERM 402
CRITICAL U2280 TPS79933 SON
MIN_LINE_WIDTH=0.6MM MIN_NECK_WIDTH=0.2MM VOLTAGE=3.3V
IN OUT EN NR NC GND THRML PAD
PP3V3_S0_NB_TVDAC 205 mA
P3V3TVDAC_NOISE
C2282 0.01UF 10% 16V CERM 402
C2285 10UF 20% 6.3V X5R 603
L2288 120-OHM-0.3A-EMI 0402-LF
PP3V3_S0_NB_CRTDAC_F
MIN_LINE_WIDTH=0.4 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
80 mA
CRITICAL C2289 22000pF-1000mA 16V NPM18
C2288 0.1UF 20% 16V CERM 402
PP3V3_S0_NB_VCCA_CRTDAC
MIN_LINE_WIDTH=0.4 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
80 mA
Layout Note: These 2 caps should be within 6.35 mm of NB edge

NO STUFF D2285 1SS418 SOD-723
=PP1V5_S0_NB_FOLLOW
PP3V3_S0_NB_TVDAC_FOLLOW
MIN_LINE_WIDTH=0.4 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
NO STUFF R2285 10 1% 1/16W MF-LF 402
L2290 120-OHM-0.3A-EMI 0402-LF
PP3V3_S0_NB_TVDAC_F
MIN_LINE_WIDTH=0.4 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
125 mA
C2290 10UF 20% 6.3V X5R 603
CRITICAL C2292 22000pF-1000mA 16V NPM18
C2291 0.1UF 20% 16V CERM 402
PP3V3_S0_NB_VCCA_TVDACA
MIN_LINE_WIDTH=0.3 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
40 mA

GMCH Graphics Core Power
=PPVCORE_S0_NB_GFX
7700 mA
CRITICAL C2210 470UF 20% 2.5V TANT D2T
WF: Matanzas has 2x 330uF
C2212 22UF 20% 6.3V CERM 805
C2213 10UF 20% 6.3V X5R 603
C2214 1UF 10% 6.3V CERM 402
C2215 0.47UF 10% 6.3V CERM-X5R 402
C2216 0.1UF 20% 16V CERM 402
C2217 0.1UF 20% 16V CERM 402
PLACEMENT_NOTE=Place in GMCH cavity

CRITICAL C2294 22000pF-1000mA 16V NPM18
C2293 0.1UF 20% 16V CERM 402
PP3V3_S0_NB_VCCA_TVDACB
MIN_LINE_WIDTH=0.3 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
40 mA
Layout Note: These 8 caps should be within 6.35 mm of NB edge

CRITICAL C2296 22000pF-1000mA 16V NPM18
C2295 0.1UF 20% 16V CERM 402
PP3V3_S0_NB_VCCA_TVDACC
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
40 mA

NEED TO FIND A "1£GH, 500MA, 78MOHM" INDUCTOR
WF: Should be 1uH, 30%
L2220 1.0UH-0.5A-0.675A 1007
WF: Check part properties
=PP1V8_S0_NB_LVDS
260 mA
DNI CRITICAL C2229 220UF 20% 2.5V POLY CASE-B2-SM
C2221 0.001uF 20% 50V CERM 402
C2223 0.001uF 20% 50V CERM 402
PP1V8_S0_NB_VCCTXLVDS
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.8V
110 mA
=GND_NB_VSSA_LVDS
Layout Note: Route to cap, then GND
=PP1V8_S0_NB_VCCD_LVDS
150 mA
C2226 1UF 10% 6.3V CERM 402

CRITICAL C2298 22000pF-1000mA 16V NPM18
C2297 0.1UF 20% 16V CERM 402
PP3V3_S0_NB_VCCA_DAC_BG
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
5 mA
=GND_NB_VSSA_DAC_BG
Layout Note: Route to caps, then GND

=PP3V3_S0_NB_VCCHV
NO STUFF R2242 22K 5% 1/16W MF-LF 402
NO STUFF R2243 22K 5% 1/16W MF-LF 402
NO STUFF R2244 22K 5% 1/16W MF-LF 402
R2245 22K 5% 1/16W MF-LF 402
GFX_VID<0>
GFX_VID<1>
GFX_VID<2>
GFX_VID<3>
VID<3:0>=1001=1.05575V
1000=1.08150V
0011=1.21025V
R2247 22K 5% 1/16W MF-LF 402
R2248 22K 5% 1/16W MF-LF 402
R2249 22K 5% 1/16W MF-LF 402
NO STUFF R2250 22K 5% 1/16W MF-LF 402

=PP3V3_S0_NB_VCCSYNC
10 mA
C2230 0.1UF 20% 16V CERM 402

WARNING VOLTAGE DROP
=PP1V8_S0_NB_DPLL
(1.7V - 5.5V)
80 mA
C2265 1UF 10% 6.3V CERM 402
CRITICAL U2265 TPS731125 SOT23-5
Vout = 1.204V * (Ra + Rb)/Rb
Ra || Rb should be 19Kohms
IN OUT EN NR/FB GND
PP1V25_S0_NB_DPLL
MIN_LINE_WIDTH=0.4 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.25V
P1V25S0NBDPLL_FB
C2266 10UF 20% 6.3V X5R 603
PP1V25_S0_NB_DPLL_RF
C2267 0.01UF 10% 16V CERM 402
R2266 0.300 5% 1/10W FF 603
WF: Is this the best part to use?
WF: Check C2266 value, R2267 value
80 mA
R2261 0 5% 1/16W MF-LF 402
PP1V25_S0_NB_VCCA_DPLLA
MIN_LINE_WIDTH=0.3 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.25V
C2261 0.1UF 20% 16V CERM 402
R2262 0 5% 1/16W MF-LF 402
PP1V25_S0_NB_VCCA_DPLLB
MIN_LINE_WIDTH=0.3 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.25V
C2262 0.1UF 20% 16V CERM 402
80 mA

Current numbers from Crestline EDS Addendum, doc #20127.

NB Graphics Decoupling

SYNC_MASTER=WFERRY SYNC_DATE=06/15/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

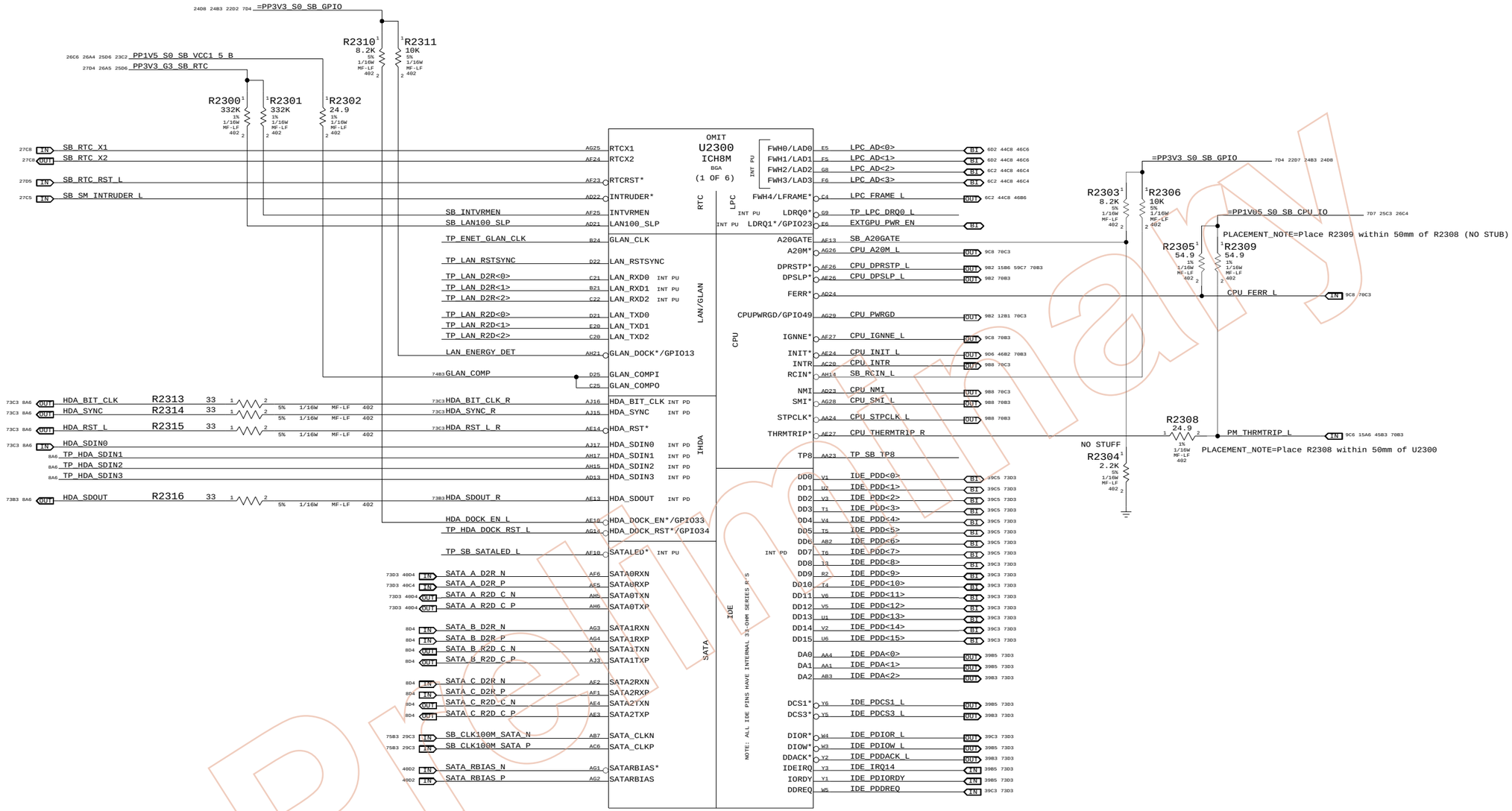
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 22 OF 106	

Preliminary

WWW.AliSaler.Com



	HDA
HDA_BIT_CLK	24.000MHZ CLOCK W/INTERNAL WEAK PD
HDA_RST#	
HDA_SDIN[0-2]	INTEGRATED PDs
HDA_SDOUT	INTEGRATED PD
ACZ_SYNC	INTEGRATED PD

SB Enet, Disk, FSB, LPC

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

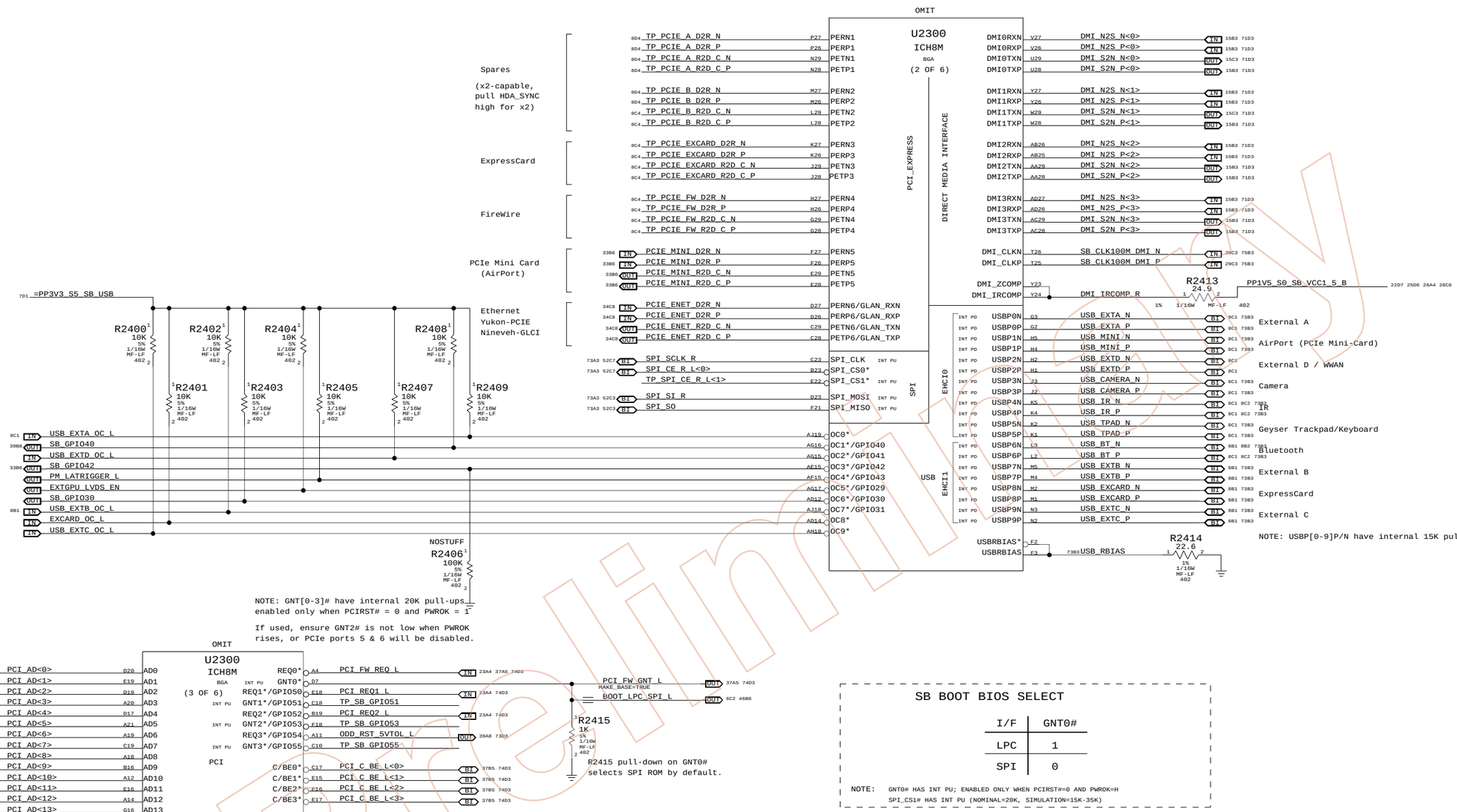
II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 23 OF 106	

WWW.AliSaler.Com



SB PCI, PCIe, DMI, USB

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

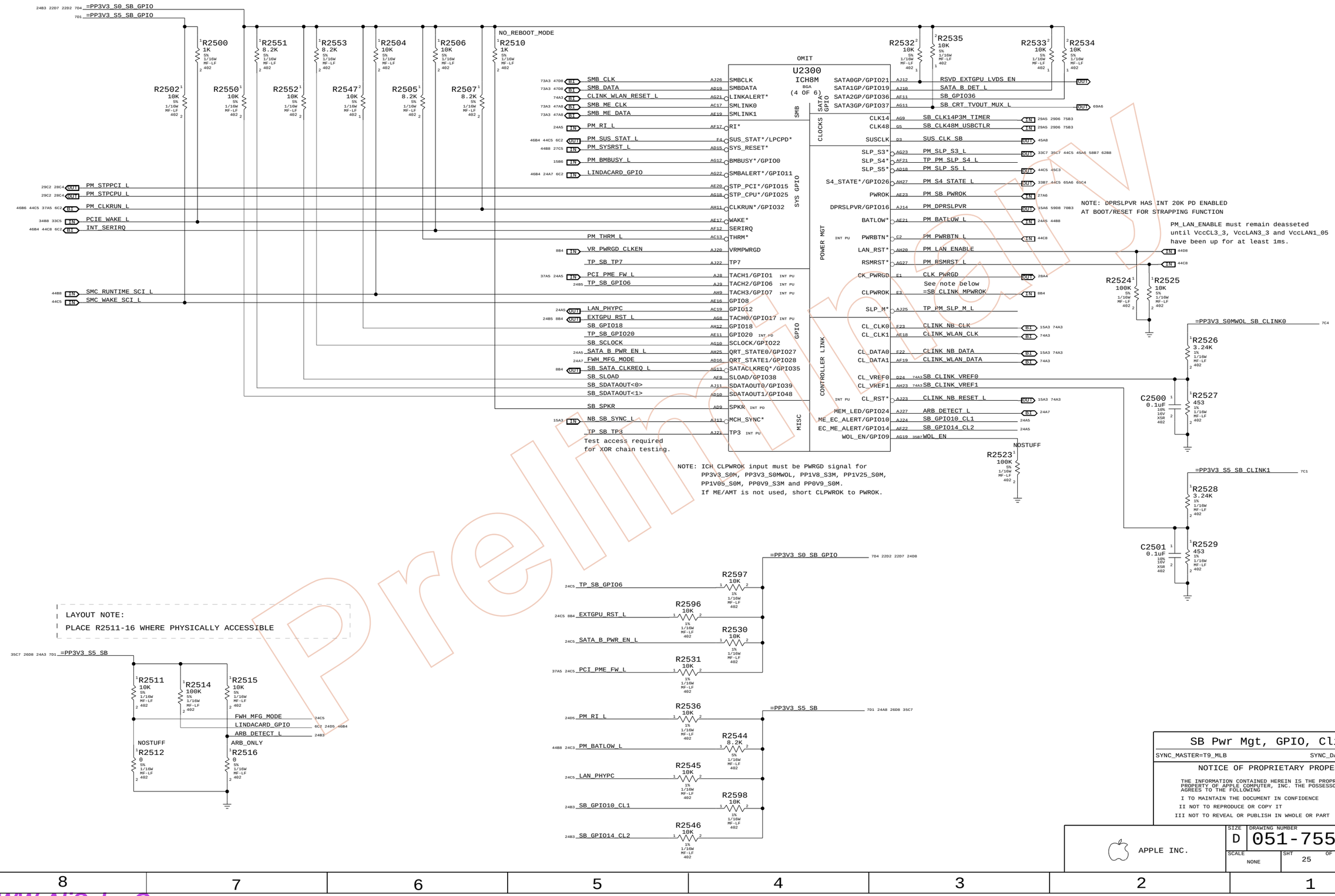
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

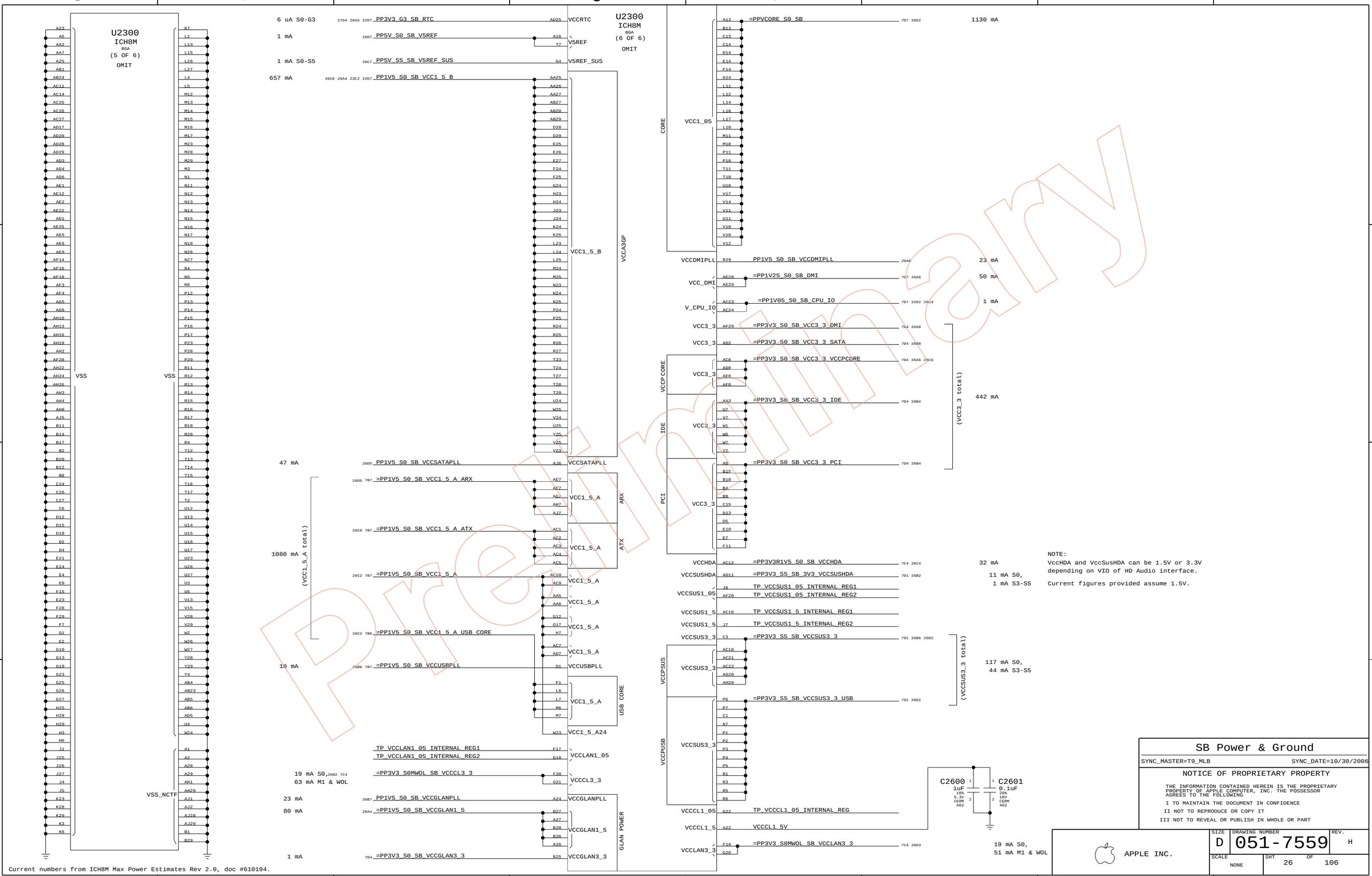
SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE SHT 24 OF 106

WWW.AliSaler.Com



Preliminary
WWW.AliSaler.Com



Preliminary
WWW.AliSaler.Com

Preliminary

ICH V5REF BYPASS
(ICH REFERENCE FOR 5V TOLERANCE ON CORE WELL INPUT)

=PP3V3_S0_SB
=PP5V_S0_SB
R2702 100 1/16W MF-LF 402 5%
D2702 HN2S02JE SOT-665
PP5V_S0_SB_V5REF
VOLTAGE=5V
MIN_LINE_WIDTH=0.3MM
MIN_NECK_WIDTH=0.25MM
C2703 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE C2703 < 2.54MM OF PIN A16..T7 OF SB
ON SECONDARY SIDE OR 3.56MM ON PRIMARY

ICH V5REF_SUS BYPASS
(ICH REFERENCE FOR 5V TOLERANCE ON RESUME WELL LOGIC)

=PP3V3_S5_SB
=PP5V_S5_SB
R2701 10 1/16W MF-LF 402 5%
D2702 HN2S02JE SOT-665
PP5V_S5_SB_V5REF_SUS
VOLTAGE=5V
MIN_LINE_WIDTH=0.3MM
MIN_NECK_WIDTH=0.25MM
C2704 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE C2704 < 2.54MM OF PIN G4 OF SB
ON SECONDARY SIDE OR 3.56MM ON PRIMARY

ICH VCC1_5_A/ARX BYPASS
(ICH LOGIC&IO[ARX] 1.5V PWR)

=PP1V5_S0_SB_VCC1_5_A_ARX
C2711 1UF 10% 6.3V CERM 402

PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PINS AE7..AJ7

L2702 MAY HAVE CHANGE TO 1.0UH PART

L2702 10UH-100MA 0805
=PP1V5_S0_SB
PP1V5_S0_SB_VCCSATAPLL
VOLTAGE=1.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM
C2735 10UF 20% 6.3V X5R 603
C2717 1UF 10% 6.3V CERM 402

PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PIN AJ6

ICH VCC3_3 BYPASS
(ICH IO BUFFER 3.3V PWR)

=PP3V3_S0_SB_VCC3_3_VCCPCORE
C2713 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PIN AH11

ICH VCC1_5_A/ATX BYPASS
(ICH LOGIC&IO[ATX] 1.5V PWR)

=PP1V5_S0_SB_VCC1_5_A_ATX
C2714 1UF 10% 6.3V CERM 402

PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PIN AC1..AC5

=PP1V5_S0_SB
L2700 FERR-330-OHM-1.5A (ICH IO,LOGIC 1.5V PWR) 0805-1

ICH VCCA3GP(VCC1_5_B BYPASS
PP1V5_S0_SB_VCC1_5_B
VOLTAGE=1.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM
OMIT
CRITICAL
C2700 220UF 20% 2.5V POLY CASE-B2
NOSTUFF
C2705 22UF 20% 6.3V CERM 805
C2706 22UF 20% 6.3V CERM 805
C2707 2.2UF 20% 6.3V CERM1 603

PLACEMENT NOTE:
PLACE C2700 & C2705-07 < 2.54MM OF SB
ON SECONDARY SIDE OR 3.56MM ON PRIMARY
DISTRIBUTED BETWEEN AA25..V23

M70 DOES NOT USE GIGABIT IN SB, SO NO NEED FOR PLL FILTERING

PP1V5_S0_SB_VCCGLANPLL
VOLTAGE=1.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM
NOSTUFF
C2742 10UF 20% 6.3V X5R 603
C2732 2.2UF 20% 6.3V CERM1 603

PLACEMENT NOTE:
PLACE CAPS < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN A24

ICH VCCSUS3_3 BYPASS
(ICH SUSPEND 3.3V PWR)

=PP3V3_S5_SB_VCCSUS3_3
C2720 0.1UF 10% 16V X5R 402
C2743 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE CAPS NEAR PIN C2..AH28

ICH VCCUSBPLL BYPASS
(ICH USB PLL 1.5V PWR)

=PP1V5_S0_SB_VCCUSBPLL
C2715 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE C2715 NEAR PIN D1 OF SB

=PP3V3_S0_SB_VCC3_3_SATA
C2738 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN AD2

ICH VCC3_3 BYPASS
(ICH IO BUFFER 3.3V PWR)

=PP3V3_S0_SB_VCC3_3_VCCPCORE
C2709 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE C2709 NEAR PIN B27 OF SB

=PP1V5_S0_SB
L2703 NEED CHANGE TO 1UH PART
R2700 1 1/10W 5% MF-LF 402
L2703 1.0UH-0.5A-0.675A 1007
PP1V5_S0_SB_VCCDMIPLL
VOLTAGE=1.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM

ICH VCCDMIPLL BYPASS
(ICH DMI PLL 1.5V PWR)

PP1V5_S0_SB_VCCDMIPLL
VOLTAGE=1.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM
C2701 0.01UF 10% 16V CERM 402
C2708 10UF 20% 6.3V X5R 603

PLACEMENT NOTE:
PLACE CAPS < 2.54MM OF SB ON
SECONDARY SIDE OR 3.56MM ON PRIMARY

=PP3V3_S0_SB_VCC3_3_DMI
C2737 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE CAP < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN AF29

=PP1V25_S0_SB_DMI
C2739 22UF 20% 6.3V CERM 805

PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN AE29

ICH VCCRTC BYPASS
(ICH RTC 3.3V PWR)

PP3V3_G3_SB_RTC
C2730 0.1UF 10% 16V X5R 402
C2729 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE CAPS NEAR PIN AD25 OF SB

PLACEMENT NOTE:
PLACE CAPS AT EDGE OF SB

ICH CORE/VCC1_05 BYPASS
(ICH CORE 1.05V PWR)

=PPVCORE_S0_SB
C2718 0.1UF 10% 16V X5R 402
C2702 0.1UF 10% 16V X5R 402
OMIT
CRITICAL
C2716 330UF 20% 2.5V POLY CASE-C2

PLACEHOLDER
FOR 270UF

ICH VCCSUS3_3 BYPASS
(ICH SUSPEND 3.3V PWR)

=PP3V3_S5_SB_VCCSUS3_3
C2731 0.1UF 10% 16V X5R 402
C2734 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE CAPS NEAR PINS
AC18..AH28

ICH VCC_PAUX/VCCLAN3_3 BYPASS
(ICH LAN I/F BUFFER 3.3V PWR)

=PP3V3_S0MWOL_SB_VCCLAN3_3
C2719 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE CAP UNDER SB NEAR PINS
F19 AND G20

ICH USB/VCCSUS3_3 BYPASS
(ICH SUSPEND USB 3.3V PWR)

=PP3V3_S5_SB_VCCSUS3_3_USB
C2733 4.7UF 20% 6.3V CERM 603

PLACEMENT NOTE:
PLACE CAP NEAR PINS
P6..R6

ICH VCCHDA BYPASS
(ICH INTEL HDA CORE 3.3V/1.5V PWR)

=PP3V3R1V5_S0_SB_VCCHDA
C2721 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN AC12

ICH VCC1_5A BYPASS
(ICH LOGIC&IO 1.5V PWR)

=PP1V5_S0_SB_VCC1_5_A
C2710 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE CAP NEAR PINS
AC10..AD7 OF SB

ICH V_CPU_IO BYPASS
(ICH CPU I/O 1.05V PWR)

=PP1V05_S0_SB_CPU_IO
C2723 0.1UF 10% 16V X5R 402
C2722 0.1UF 10% 16V X5R 402
C2724 4.7UF 20% 6.3V CERM 603

PLACEMENT NOTE:
PLACE NEAR PINS AC23,AC24 OF SB

ICH USB CORE/VCC1_5_A BYPASS
(ICH USB CORE 1.5V PWR)

=PP1V5_S0_SB_VCC1_5_A_USB_CORE
C2712 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PINS F1..M7

ICH IDE/VCC3_3 BYPASS
(ICH IDE I/O 3.3V PWR)

=PP3V3_S0_SB_VCC3_3_IDE
C2725 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PINS AA3...Y7

=PP3V3_S0MWOL_SB_VCCCL3_3
C2740 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PINS F20,G21

ICH PCI/VCC3_3 BYPASS
(ICH PCI I/O 3.3V PWR)

=PP3V3_S0_SB_VCC3_3_PCI
NOSTUFF
C2726 0.1UF 10% 16V X5R 402
C2727 0.1UF 10% 16V X5R 402
C2728 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
DISTRIBUTE IN PCI SECTION OF SB
NEAR PINS A8 ... F11

ICH VCC3_3/VCCHDA BYPASS
(ICH INTEL HDA CORE 3.3V PWR)

=PP3V3_S5_SB_3V3_VCCSUSHDA
C2741 0.1UF 10% 16V X5R 402

PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN AD11

PP1V5_S0_SB_VCC1_5_B
MAKE_BASE=TRUE
=PP1V5_S0_SB_VCCGLAN1_5
C2736 4.7UF 20% 6.3V CERM 603

PLACEMENT NOTE:
PLACE CAP NEAR PIN B27..A26

SB Decoupling

SYNC_MASTER=WFERRY SYNC_DATE=06/01/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

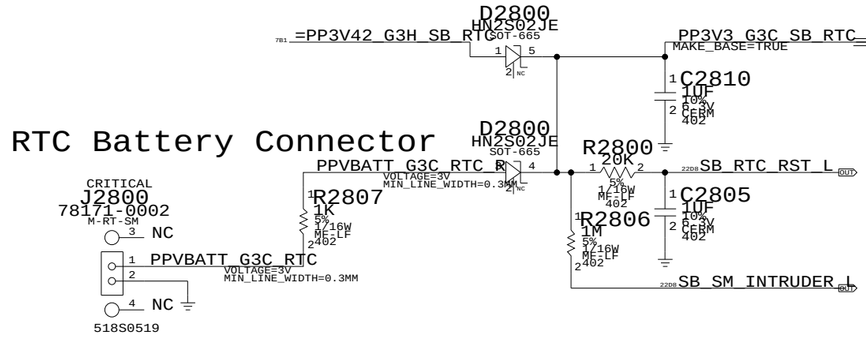
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 27 OF 106	

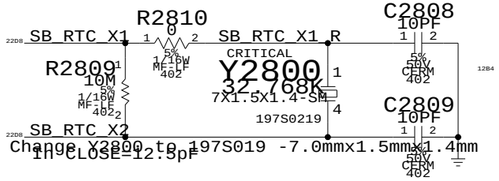
WWW.AliSaler.Com

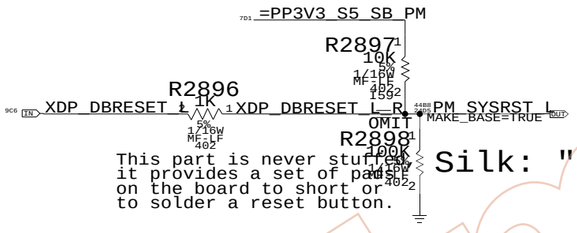
Platform Reset Connections

RTC Battery Connector

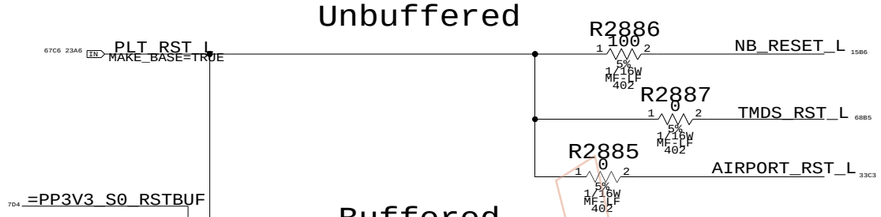


SB RTC Crystal Circuit

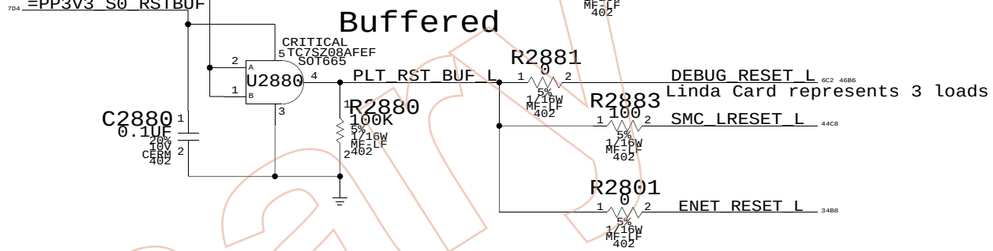




Unbuffered

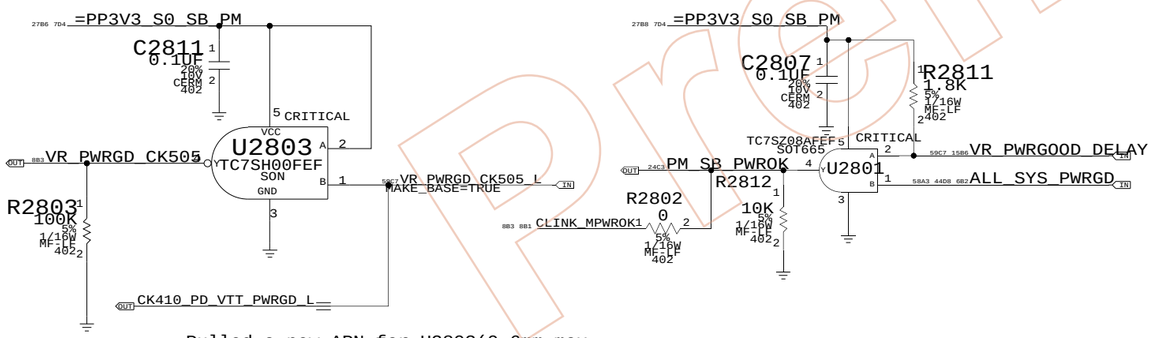


Buffered



CPU VCORE PSI

MAKE_BASE=TRUE
CPU_PSI_L = IMVP6_PSI_L



Pulled a new APN for U2803(0.6mm max
2-input NAND gate-APN:311S0304
It may take a few days before this is done through
This will allow us to sequence this part under wireless card

Initial resistor values are based on CRB,
but may change after characterization.

SB Misc

SYNC_MASTER=NB SYNC_DATE=07/26/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	28	106

Preliminary

WWW.AliSaler.Com

SELIGO RECOMMEND TO REMOVE L2903,R2900,C2907,C2910
R2901,L2902,C2916,C2911,C2914 and R2902

ORIGINAL DESIGN:
USE 155S0302 FOR L2902(R2906) AND L2903(R2907)
STUFF C2907,C2910,C2916,C2911,C2914
USE 2.2OHM FOR R2900,R2901 AND 1OHM FOR R2902

=PP3V3_S0_CK505
L2901 FERR-120-OHM-1.5A 0402-LF
PP3V3_S0_CK505_VDD_CPU_SRC MIN_LINE_WIDTH=0.5mm MIN_NECK_WIDTH=0.2mm VOLTAGE=3.3V
C2900 1UF 10% 6.3V CERM 402
C2901 10UF 20% 6.3V X5R 603
C2902 C2903 C2904 C2905 C2906 0.1UF 10% 16V X5R 402
PP3V3_S0_CK505_VDD48 MIN_LINE_WIDTH=0.5mm MIN_NECK_WIDTH=0.2mm VOLTAGE=3.3V
R2901 0 5% 1/16W MF-LF 402
R2906 0 5% 1/16W MF-LF 402
=PP3V3_S0_CK505
C2909 0.1UF 10% 16V X5R 402
C2910 NOSTUFF 10UF 20% 6.3V X5R 603
C2911 NOSTUFF 1UF 10% 6.3V CERM 402
PP3V3_S0_CK505_VDD_PCI MIN_LINE_WIDTH=0.5mm MIN_NECK_WIDTH=0.2mm VOLTAGE=3.3V
C2912 C2913 0.1UF 10% 16V X5R 402
C2914 NOSTUFF 10UF 20% 6.3V X5R 603
R2907 0 5% 1/16W MF-LF 402
PP3V3_S0_CK505_VDDA_R MIN_LINE_WIDTH=0.5mm VOLTAGE=3.3V MIN_NECK_WIDTH=0.2mm
R2900 0 5% 1/16W MF-LF 402
PP3V3_S0_CK505_VDDA VOLTAGE=3.3V MIN_LINE_WIDTH=0.5mm MIN_NECK_WIDTH=0.2mm
C2907 NOSTUFF 10UF 20% 6.3V X5R 603
C2908 0.1UF 10% 16V X5R 402
PP3V3_S0_CK505_VDD_REF MIN_LINE_WIDTH=0.5mm MIN_NECK_WIDTH=0.2mm VOLTAGE=3.3V
R2902 0 5% 1/16W MF-LF 402
C2915 0.1UF 10% 16V X5R 402
C2916 NOSTUFF 10UF 20% 6.3V X5R 603

NEED TO CHECK CAP VALUE

CRITICAL
Y2901 14.31818 5X3.2-SM
C2989 C2990 18PF 5% 50V CERM 402

VDD_48 3
VDD_CPU 43
VDD_PCI 61
VDD_REF 67
VDD_SRC 49
12 17 28 35

(EACH POWER PIN PLACED ONE 0.1UF)
(PLACED 0.1UF NEAR THE RELATIVE POWER PIN)

CRITICAL
U2900 SLG2AP101 QFN

VDD_A	38			
VSS_A	39			
XTAL_IN	51	CK505_XTAL_IN		
XTAL_OUT	50	CK505_XTAL_OUT		
FS_B/TEST_MODE	8	CK505_FSB_TEST_MODE	IN	29B8
PCI_1	57	CK505_PCI1_CLK	OUT	75D3 29B6
PCI_2	58	CK505_PCI2_CLK	OUT	75D3 8C4
PCI_3	63	CK505_PCI3_CLK	OUT	75D3 29A6
PCI_4	64	CK505_PCI4_CLK	OUT	75D3 8C4
PCI_5/FCT_SEL	65	CK505_PCI5_FCTSEL1	BI	75D3 29B2
PCIF_0/ITP_EN	68	CK505_PCIF0_CLK	OUT	75D3 29B6
PCIF_1	1	CK505_PCIF1_CLK	OUT	75D3 29B6 6C7
SCL	47	=SMBUS_CK505_SCL	IN	47D6
SDA	48	=SMBUS_CK505_SDA	BI	47D6
		CK505_PGMODE		28A4
VSS_48	5			
VSS_CPU	46			
	62			
VSS_PCI	66			
VSS_REF	52			
VSS_SRC	31			
THRM_PAD	69			

PCI_STOP*	56	PM_STPPCI_L	IN	24C8 29C2
CPU_STOP*	55	PM_STPCPU_L	IN	24C8 29C2
CPU_0*	44	CK505_CPU0_N	OUT	6C7 29D6 75D3
CPU_0	45	CK505_CPU0_P	OUT	6C7 29D6 75D3
CPU_1_MCH*	41	CK505_CPU1_N	OUT	6C7 29D6 75D3
CPU_1_MCH	42	CK505_CPU1_P	OUT	6C7 29D6 75D3
CPU_ITP*/SRC_10*	36	CK505_CPU2_ITP_SRC10_N	OUT	6C7 29D6 75D3
CPU_ITP/SRC_10	37	CK505_CPU2_ITP_SRC10_P	OUT	6C7 29D6 75D3
SRC_0*/LCD_CLK*	11	CK505_LVDS_N	OUT	6C7 29C6 75C3
SRC_0/LCD_CLK	10	CK505_LVDS_P	OUT	6C7 29C6 75D3
SRC_1*	14	TP_CK505_SRC1_N	OUT	8C4
SRC_1	13	TP_CK505_SRC1_P	OUT	8C4
CLKREQ_1*	9	CK505_SRC_CLKREQ1_L	IN	29C2
SRC_2*	16	CK505_SRC2_N	OUT	6C7 29C6 75C3
SRC_2	15	CK505_SRC2_P	OUT	6C7 29C6 75C3
SRC_3*	19	TP_CK505_SRC3_N	OUT	8C4
SRC_3	18	TP_CK505_SRC3_P	OUT	8C4
CLKREQ_3*	59	CK505_SRC_CLKREQ3_L	IN	29C2
SRC_4*	22	CK505_SRC4_N	OUT	6C7 29C6 75C3
SRC_4	21	CK505_SRC4_P	OUT	6C7 29C6 75C3
CLKREQ_4*	20	SB_CLK100M_SATA_OE_L	IN	8B3
SRC_5*	24	CK505_SRC5_N	OUT	6C7 29C6 75C3
SRC_5	23	CK505_SRC5_P	OUT	6C7 29C6 75C3
CLKREQ_5*	60	NB_CLKREQ_L	IN	15A3
SRC_6*	27	CK505_SRC6_N	OUT	6C7 29B6 75C3
SRC_6	26	CK505_SRC6_P	OUT	6C7 29C6 75C3
CLKREQ_6*	25	CK505_SRC_CLKREQ6_L	IN	33C5
SRC_7*	30	TP_CK505_SRC7_N	OUT	8C4
SRC_7	29	TP_CK505_SRC7_P	OUT	8C4
CLKREQ_7*	40	CK505_PGMODE		28B5
SRC_8*	32	CK505_SRC8_N	OUT	6B7 29B6 75C3
SRC_8	33	CK505_SRC8_P	OUT	6B7 29B6 75C3
CLKREQ_8*	34	=ENET_CLKREQ_L	IN	8C4 34B8
DOT_96*/27M_SS	7	CK505_DOT96_27M_N	OUT	6C7 29B6 75D3
DOT_96/27M	6	CK505_DOT96_27M_P	OUT	6C7 29B6 75D3
CKPWRGD/PD*	2	CLK_PWRGD	IN	24C3
48M/FS_A	4	CK505_USB48_FSA	OUT	29D8 75D3
REF_0/FS_C/TEST_SEL	54	CK505_CLK14P3M_TIMER	OUT	29D8 75D3
GPU_STOP*	53	CK505_REF1	BI	

(FROM ICH8M GPIO15 STPPCI*)
(FROM ICH8M GPIO25 STPCPU*)

=PP3V3_S0_CK505
R2903 10K 5% 1/16W MF-LF 402
(FW PCI 33MHZ)
(TPM LPC 33MHZ)
(SMC LPC 33MHZ)
(PCI SLOT)
(PORT80 LPC 33MHZ)
CK505_PCIF0_CLK
(ICH8M PCI 33MHZ)
(PULL UP PIN 68 TO ENABLE ITP HOST CLK)
(ICH SM BUS)

(NO INT PD)
(INT PU)
(NO INT PU)
(INT PU)
(INT PU)
(INT PU)
(INT PU)
(INT PU)
(INT PD)

NOSTUFF
R2905 475 1% 1/16W MF-LF 402

0 = VTT_PWRGD#/PD
1 = CKPWRGD/PD#

U2900 HAS INTERNAL PU ON PGMODE

475 OHM FOR CK410M
COMPATIBILITY
STUFF R2905 FOR CK410M MODE

(CPU HOST 133/167MHZ)
(GMCH HOST 133/167MHZ)
(ITP HOST 133/167MHZ)
(GMCH D_REFSSCLKIN DISPLAY PLL B 100MHZ)
(SLOT F - GPU PCI-E 100 MHZ)
(ICH8M DMI 100 MHZ)
(SLOT D - 4 LANE PCI-E FOR EXPRESSCARD)
(ICH SATA 100 MHZ)
(FROM ICH8M GPIO35)
(GMCH G_CLKIN 100 MHZ)
(FROM GMCH CLK_REQ*)
(WIRELESS PCI-E 100 MHZ)
(DB400 SRC)
(SLOT E)
(GMCH D_REFCLKIN DISPLAY PLL A 96MHZ)
(FROM ICH8M)
(ICH8M USB 48MHZ)
(ICH8M,SIO,LPC REF. 14.318MHZ)

FCTSEL1	PIN 6	PIN 7	PIN 10	PIN 11
0	DOT96T	DOT96C	100MT_SST	100MC_SST
1	27M NON SPREAD	27M SPREAD	SRCT0	SRCC0

* FOR INT. GRAPHIC SYSTEM
* FOR EXT. GRAPHIC SYSTEM

Clock (CK505)
SYNC_MASTER=DSIMON SYNC_DATE=06/06/2006

NOTICE OF PROPRIETARY PROPERTY
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.
SIZE D | DRAWING NUMBER 051-7559 | REV. H
SCALE NONE | SHT 29 OF 106

Preliminary
WWW.AliSaler.Com

CLK Termination

R3032 33 5% 1/16W MF-LF 402
CK505_USB48_FSA → SB_CLK48M_USBCTLR

R3033 2.2K 5% 1/16W MF-LF 402
CK505_FSA

R3034 33 5% 1/16W MF-LF 402
CK505_CLK14P3M_TIMER → SB_CLK14P3M_TIMER

R3035 10K 5% 1/16W MF-LF 402
CK505_FSC

=PP1V25R1V05_S0_FSB_NB

(TO MCH FS_A)
R3081 1K 5% 1/16W MF-LF 402
NB_BSEL<0>
R3080 NOSTUFF 1K 5% 1/16W MF-LF 402
R3082 0 5% 1/16W MF-LF 402
CK505_FSA → CPU_BSEL<0>
(TO ICH8M USB 48MHZ)
R3083 1K 5% 1/16W MF-LF 402
(FROM CPU FS_A)

=PP1V25R1V05_S0_FSB_NB

(TO MCH FS_B)
R3085 1K 5% 1/16W MF-LF 402
NB_BSEL<1>
R3084 1K 5% 1/16W MF-LF 402
R3086 0 5% 1/16W MF-LF 402
CK505_FSB_TEST_MODE → CPU_BSEL<1>
NOSTUFF
R3087 1K 5% 1/16W MF-LF 402
(FROM CPU FS_B)

=PP1V25R1V05_S0_FSB_NB

(TO MCH FS_C)
R3089 1K 5% 1/16W MF-LF 402
NB_BSEL<2>
R3088 NOSTUFF 1K 5% 1/16W MF-LF 402
R3090 0 5% 1/16W MF-LF 402
CK505_FSC → CPU_BSEL<2>
(ICH8M 14.318MHZ)
R3091 1K 5% 1/16W MF-LF 402
(FROM CPU FS_C)

FS_C	FS_B	FS_A	CPU
0	0	0	266M
0	0	1	133M
0	1	1	166M
* 0	1	0	200M
1	1	0	400M
1	1	1	Resrvd
1	0	1	100M
1	0	0	333M

NOSTUFF R3082, R3086, R3090
FOR MANUAL CPU FREQUENCY

CPU speed is currently set to 200MHz

R3000 0 5% 1/16W MF-LF 402
CK505_CPU0_P → FSB_CLK_CPU_P
R3001 0 5% 1/16W MF-LF 402
CK505_CPU0_N → FSB_CLK_CPU_N
(CPU HOST 133/167MHZ)

R3002 0 5% 1/16W MF-LF 402
CK505_CPU1_P → FSB_CLK_NB_P
R3003 0 5% 1/16W MF-LF 402
CK505_CPU1_N → FSB_CLK_NB_N
(GMCH HOST 133/167MHZ)

ITP
R3004 0 5% 1/16W MF-LF 402
CK505_CPU2_ITP_SRC10_P → CPU_XDP_CLK_P
ITP
R3005 0 5% 1/16W MF-LF 402
CK505_CPU2_ITP_SRC10_N → CPU_XDP_CLK_N
(ITP HOST 133/167MHZ)

R3006 0 5% 1/16W MF-LF 402
CK505_LVDS_P → NB_CLK100M_DPLLSS_P
R3007 0 5% 1/16W MF-LF 402
CK505_LVDS_N → NB_CLK100M_DPLLSS_N
(Int Gfx LVDS 100MHz)

R3010 0 5% 1/16W MF-LF 402
CK505_SRC2_P → SB_CLK100M_DMI_P
R3011 0 5% 1/16W MF-LF 402
CK505_SRC2_N → SB_CLK100M_DMI_N
(ICH8M DMI 100MHZ)

R3014 0 5% 1/16W MF-LF 402
CK505_SRC4_P → SB_CLK100M_SATA_P
R3015 0 5% 1/16W MF-LF 402
CK505_SRC4_N → SB_CLK100M_SATA_N
(ICH8M SATA 100MHZ)

R3016 0 5% 1/16W MF-LF 402
CK505_SRC5_P → NB_CLK100M_PCIE_P
R3017 0 5% 1/16W MF-LF 402
CK505_SRC5_N → NB_CLK100M_PCIE_N
(GMCH PEG/DMI 100MHZ)

R3018 0 5% 1/16W MF-LF 402
CK505_SRC6_P → PCIE_CLK100M_MINI_P
R3019 0 5% 1/16W MF-LF 402
CK505_SRC6_N → PCIE_CLK100M_MINI_N
(WIRELESS PCI-E MINI 100MHZ)

R3022 0 5% 1/16W MF-LF 402
CK505_SRC8_P → PCIE_CLK100M_ENET_P
R3023 0 5% 1/16W MF-LF 402
CK505_SRC8_N → PCIE_CLK100M_ENET_N
(FOR YUKON 100MHZ)

R3024 0 5% 1/16W MF-LF 402
CK505_DOT96_27M_P → NB_CLK96M_DOT_P
R3025 0 5% 1/16W MF-LF 402
CK505_DOT96_27M_N → NB_CLK96M_DOT_N
(Int GFX DOT 96MHZ)

R3026 33 5% 1/16W MF-LF 402
CK505_PCIF0_CLK → PCI_CLK33M_LPCPLUS
(PORT80 LPC 33MHZ)
R3027 33 5% 1/16W MF-LF 402
CK505_PCIF1_CLK → PCI_CLK33M_SB
(TO ICH8M PCI 33MHZ)
R3028 33 5% 1/16W MF-LF 402
CK505_PCI1_CLK → PCI_CLK33M_FW
(TO FIREWIRE PCI 33MHZ)

R3030 33 5% 1/16W MF-LF 402
CK505_PCI3_CLK → PCI_CLK33M_SMC
(TO SMC PCI 33MHZ)

PCI_CLK33M_SMC
PCI_CLK33M_SB
SB_CLK48M_USBCTLR
SB_CLK14P3M_TIMER
PCI_CLK33M_FW
C3000 NOSTUFF 3.3PF 0.25% 50V CERM 402
C3001 NOSTUFF 3.3PF 0.25% 50V CERM 402
C3002 NOSTUFF 3.3PF 0.25% 50V CERM 402
C3003 NOSTUFF 3.3PF 0.25% 50V CERM 402
C3004 NOSTUFF 3.3PF 0.25% 50V CERM 402

Place close to CLK Gen
For reducing noise coupling to wireless frequencies

CLKREQ Controls

=PP3V3_S0_CK505
R3046 10K 5% 1/16W MF-LF 402
PM_STPPCI_L
R3047 10K 5% 1/16W MF-LF 402
PM_STPCPU_L

R3050 NOSTUFF 10K 5% 1/16W MF-LF 402
CK505_SRC_CLKREQ1_L
R3051 NOSTUFF 10K 5% 1/16W MF-LF 402
CK505_SRC_CLKREQ3_L

=PP3V3_S0_CK505
R3067 NOSTUFF 10K 5% 1/16W MF-LF 402
CK505_PCI5_FCTSEL1
R3066 10K 5% 1/16W MF-LF 402

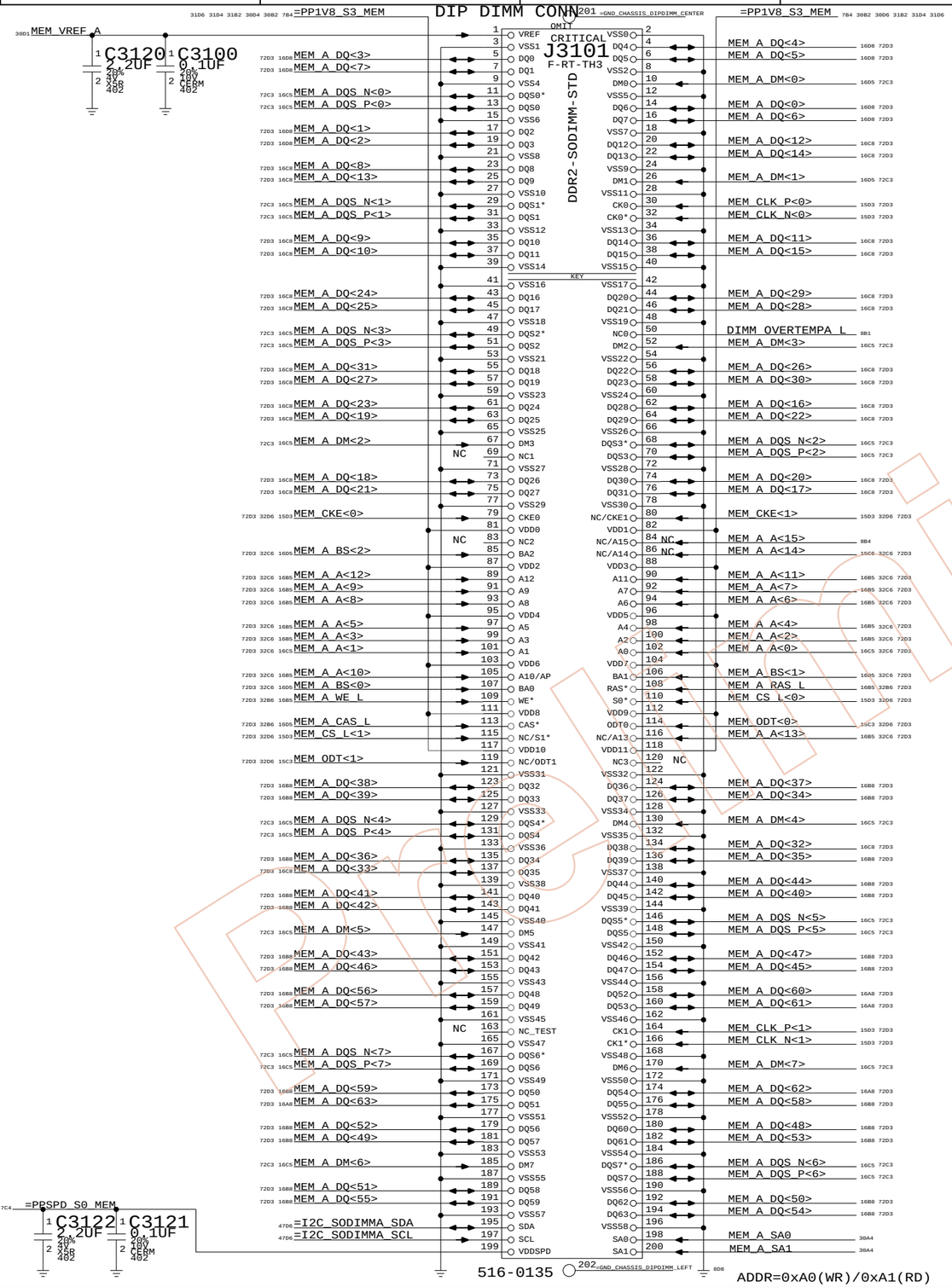
Preliminary

Clock Termination
SYNC_MASTER=DSIMON-WF SYNC_DATE=06/06/2006

NOTICE OF PROPRIETARY PROPERTY
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

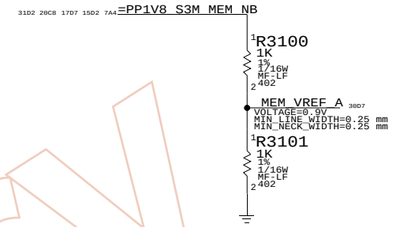
APPLE INC.
SIZE D | DRAWING NUMBER 051-7559 | REV. H
SCALE NONE | SHT 30 OF 106

WWW.AliSaler.Com



DDR2 VRef

One 0.1uF per connector



Yellow uses 10K divider and TLV2463 to drive MCH and DIMM connectors. (See Capell Valley pg 47)

Page Notes

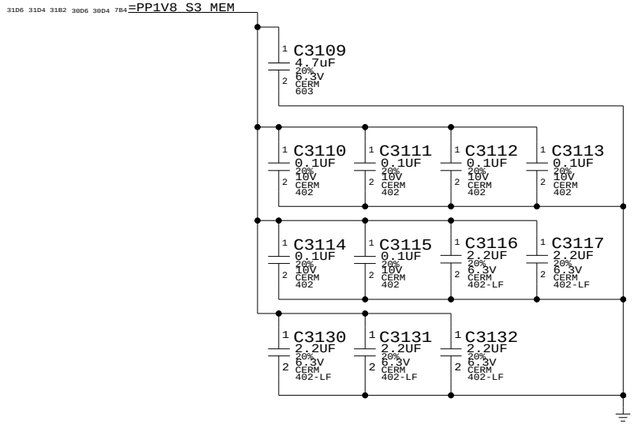
Power aliases required by this page:
- =PP1V8_S3_MEM
- =PPSPD_S0_MEM (2.5V - 3.3V)

Signal aliases required by this page:
- =I2C_MEM_SCL
- =I2C_MEM_SDA

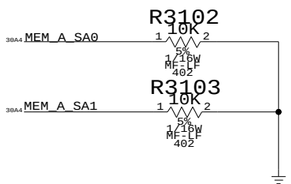
BOM options provided by this page:
(NONE)

DDR2 Bypass Caps

(For return current)



The 4.7uF and 1.0uF caps can be changed to 5x 2.2uF caps, when they get cheaper.



DDR2 SO-DIMM Connector A

SYNC_MASTER=MEMORY SYNC_DATE=06/20/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE D | DRAWING NUMBER 051-7559 | REV. H

SCALE NONE | SHT 31 OF 106

Preliminary

WWW.AliSaler.Com

DDR2 VREF (FOR CONNECTOR B)

One 0.1uF per connector

=PP1V8_S3M_MEM_NB

R3201 1K 1% 1/16W MF-LF 402

MEM_VREF_B

VOLTAGE=0.9V
MIN_LINE_WIDTH=0.25 mm
MIN_NECK_WIDTH=0.25 mm

R3202 1K 1% 1/16W MF-LF 402

Yellow uses 10K divider and TLV2463 to drive MCH and DIMM connectors. (See Capell Valley pg 47)

Page Notes

Power aliases required by this page:
- =PP1V8_S3_MEM
- =PPSPD_S0_MEM (2.5V - 3.3V)

Signal aliases required by this page:
- =I2C_MEM_SCL
- =I2C_MEM_SDA

BOM options provided by this page:
(NONE)

NOTE: This page does not supply VREF. The reference voltage must be provided by another page.

DDR2 Bypass Caps

(For return current)

=PP1V8_S3_MEM

C3209 4.7uF 20% 6.3V CERM 603

C3210 0.1UF 20% 10V CERM 402
C3211 0.1UF 20% 10V CERM 402
C3212 0.1UF 20% 10V CERM 402
C3213 0.1UF 20% 10V CERM 402

C3214 0.1UF 20% 10V CERM 402
C3215 0.1UF 20% 10V CERM 402
C3216 2.2UF 20% 6.3V CERM 402-LF
C3217 2.2UF 20% 6.3V CERM 402-LF

C3230 2.2UF 20% 6.3V CERM 402-LF
C3231 2.2UF 20% 6.3V CERM 402-LF
C3232 2.2UF 20% 6.3V CERM 402-LF

The 4.7uF and 1.0uF caps can be changed to 5x 2.2uF caps, when they get cheaper.

MEM_VREF_B

C3220 2.2UF 20% 4V X5R 402
C3200 0.1UF 20% 10V CERM 402

=PP1V8_S3_MEM

DIP DIMM CONN

J3201 CRITICAL F-RT-TH3 DDR2-SODIMM-STD

OMIT

1	VREF		2	VSS0			
3	VSS1		4	DQ4	MEM_B_DQ<5>	16D4 72B3	
5	DQ0	MEM_B_DQ<1>	6	DQ5	MEM_B_DQ<0>	16D4 72B3	
7	DQ1	MEM_B_DQ<4>	8	VSS2			
9	VSS4		10	DM0	MEM_B_DM<0>	16D1 72B3	
11	DQS0*	MEM_B_DQS_N<0>	12	VSS5			
13	DQS0	MEM_B_DQS_P<0>	14	DQ6	MEM_B_DQ<6>	16D4 72B3	
15	VSS6		16	DQ7	MEM_B_DQ<2>	16D4 72B3	
17	DQ2	MEM_B_DQ<7>	18	VSS7			
19	DQ3	MEM_B_DQ<3>	20	DQ12	MEM_B_DQ<15>	16C4 72B3	
21	VSS8		22	DQ13	MEM_B_DQ<11>	16C4 72B3	
23	DQ8	MEM_B_DQ<13>	24	VSS9			
25	DQ9	MEM_B_DQ<12>	26	DM1	MEM_B_DM<1>	16D1 72B3	
27	VSS10		28	VSS11			
29	DQS1*	MEM_B_DQS_N<1>	30	CK0	MEM_CLK_P<3>	15D3 72B3	
31	DQS1	MEM_B_DQS_P<1>	32	CK0*	MEM_CLK_N<3>	15D3 72B3	
33	VSS12		34	VSS13			
35	DQ10	MEM_B_DQ<10>	36	DQ14	MEM_B_DQ<9>	16C4 72B3	
37	DQ11	MEM_B_DQ<8>	38	DQ15	MEM_B_DQ<14>	16C4 72B3	
39	VSS14		40	VSS15			
KEY							
41	VSS16		42	VSS17			
43	DQ16	MEM_B_DQ<17>	44	DQ20	MEM_B_DQ<21>	16C4 72B3	
45	DQ17	MEM_B_DQ<20>	46	DQ21	MEM_B_DQ<16>	16C4 72B3	
47	VSS18		48	VSS19			
49	DQS2*	MEM_B_DQS_N<2>	50	NC0	DIMM_OVERTEMPB_L	8B1	
51	DQS2	MEM_B_DQS_P<2>	52	DM2	MEM_B_DM<2>	16C1 72B3	
53	VSS21		54	VSS22			
55	DQ18	MEM_B_DQ<22>	56	DQ22	MEM_B_DQ<23>	16C4 72B3	
57	DQ19	MEM_B_DQ<18>	58	DQ23	MEM_B_DQ<19>	16C4 72B3	
59	VSS23		60	VSS24			
61	DQ24	MEM_B_DQ<29>	62	DQ28	MEM_B_DQ<25>	16C4 72B3	
63	DQ25	MEM_B_DQ<27>	64	DQ29	MEM_B_DQ<28>	16C4 72B3	
65	VSS25		66	VSS26			
67	DM3	MEM_B_DM<3>	68	DQS3*	MEM_B_DQS_N<3>	16C1 72A3	
NC 69	NC1		70	DQS3	MEM_B_DQS_P<3>	16C1 72A3	
71	VSS27		72	VSS28			
73	DQ26	MEM_B_DQ<30>	74	DQ30	MEM_B_DQ<24>	16C4 72B3	
75	DQ27	MEM_B_DQ<31>	76	DQ31	MEM_B_DQ<26>	16C4 72B3	
77	VSS29		78	VSS30			
79	CKE0	MEM_CKE<3>	80	NC/CKE1	MEM_CKE<4>	15D3 32D5 72B3	
81	VDD0		82	VDD1			
NC 83	NC2		84 NC	NC/A15	MEM_B_A<15>	8B4	
85	BA2	MEM_B_BS<2>	86 NC	NC/A14	MEM_B_A<14>	15C6 32A5 72B3	
87	VDD2		88	VDD3			
89	A12	MEM_B_A<12>	90	A11	MEM_B_A<11>	16B1 32A5 72B3	
91	A9	MEM_B_A<9>	92	A7	MEM_B_A<7>	16B1 32B5 72B3	
93	A8	MEM_B_A<8>	94	A6	MEM_B_A<6>	16B1 32B5 72B3	
95	VDD4		96	VDD5			
97	A5	MEM_B_A<5>	98	A4	MEM_B_A<4>	16B1 32B5 72B3	
99	A3	MEM_B_A<3>	100	A2	MEM_B_A<2>	16B1 32B5 72B3	
101	A1	MEM_B_A<1>	102	A0	MEM_B_A<0>	16C1 32B5 72B3	
103	VDD6		104	VDD7			
105	A10/AP	MEM_B_A<10>	106	BA1	MEM_B_BS<1>	16B1 32A6 72B3	
107	BA0	MEM_B_BS<0>	108	RAS*	MEM_B_RAS_L	16B1 32A6 72B3	
109	WE*	MEM_B_WE_L	110	S0*	MEM_CS_L<2>	15D3 32D6 72B3	
111	VDD8		112	VDD9			
113	CAS*	MEM_B_CAS_L	114	ODT0	MEM_ODT<2>	15C3 32D6 72B3	
115	NC/S1*	MEM_CS_L<3>	116	NC/A13	MEM_B_A<13>	16B1 32A5 72B3	
117	VDD10		118	VDD11			
119	NC/ODT1	MEM_ODT<3>	120 NC	NC3			
121	VSS31		122	VSS32			
123	DQ32	MEM_B_DQ<38>	124	DQ36	MEM_B_DQ<36>	16B4 72B3	
125	DQ33	MEM_B_DQ<32>	126	DQ37	MEM_B_DQ<37>	16B4 72B3	
127	VSS33		128	VSS34			
129	DQS4*	MEM_B_DQS_N<4>	130	DM4	MEM_B_DM<4>	16C1 72B3	
131	DQS4	MEM_B_DQS_P<4>	132	VSS35			
133	VSS36		134	DQ38	MEM_B_DQ<34>	16B4 72B3	
135	DQ34	MEM_B_DQ<39>	136	DQ39	MEM_B_DQ<33>	16C4 72B3	
137	DQ35	MEM_B_DQ<35>	138	VSS37			
139	VSS38		140	DQ44	MEM_B_DQ<43>	16B4 72B3	
141	DQ40	MEM_B_DQ<47>	142	DQ45	MEM_B_DQ<42>	16B4 72B3	
143	DQ41	MEM_B_DQ<45>	144	VSS39			
145	VSS40		146	DQS5*	MEM_B_DQS_N<5>	16C1 72A3	
147	DM5	MEM_B_DM<5>	148	DQS5	MEM_B_DQS_P<5>	16C1 72A3	
149	VSS41		150	VSS42			
151	DQ42	MEM_B_DQ<44>	152	DQ46	MEM_B_DQ<41>	16B4 72B3	
153	DQ43	MEM_B_DQ<40>	154	DQ47	MEM_B_DQ<46>	16B4 72B3	
155	VSS43		156	VSS44			
157	DQ48	MEM_B_DQ<48>	158	DQ52	MEM_B_DQ<53>	16B4 72B3	
159	DQ49	MEM_B_DQ<52>	160	DQ53	MEM_B_DQ<49>	16B4 72B3	
161	VSS45		162	VSS46			
NC 163	NC_TEST		164	CK1	MEM_CLK_P<4>	15D3 72B3	
165	VSS47		166	CK1*	MEM_CLK_N<4>	15D3 72B3	
167	DQS6*	MEM_B_DQS_N<6>	168	VSS48			
169	DQS6	MEM_B_DQS_P<6>	170	DM6	MEM_B_DM<6>	16C1 72A3	
171	VSS49		172	VSS50			
173	DQ50	MEM_B_DQ<50>	174	DQ54	MEM_B_DQ<51>	16B4 72B3	
175	DQ51	MEM_B_DQ<55>	176	DQ55	MEM_B_DQ<54>	16B4 72B3	
177	VSS51		178	VSS52			
179	DQ56	MEM_B_DQ<56>	180	DQ60	MEM_B_DQ<60>	16A4 72B3	
181	DQ57	MEM_B_DQ<57>	182	DQ61	MEM_B_DQ<62>	16A4 72B3	
183	VSS53		184	VSS54			
185	DM7	MEM_B_DM<7>	186	DQS7*	MEM_B_DQS_N<7>	16C1 72A3	
187	VSS55		188	DQS7	MEM_B_DQS_P<7>	16C1 72A3	
189	DQ58	MEM_B_DQ<61>	190	VSS56			
191	DQ59	MEM_B_DQ<63>	192	DQ62	MEM_B_DQ<58>	16B4 72B3	
193	VSS57		194	DQ63	MEM_B_DQ<59>	16B4 72B3	
195	SDA	=I2C_SODIMMB_SDA	196	VSS58			
197	SCL	=I2C_SODIMMB_SCL	198	SA0	MEM_B_SA0	31A3	
199	VDDSPD		200	SA1	J3201_SA1		

516-0135

202 GND_CHASSIS_DIPDIMM_CENTER

ADDR=0xA4(WR)/0xA5(RD)

MEM_B_SA0

R3203 10K 5% 1/16W MF-LF 402

=PPSPD_S0_MEM

R3200 10K 5% 1/16W MF-LF 402

Resistor prevents pwr-gnd short

=PPSPD_S0_MEM

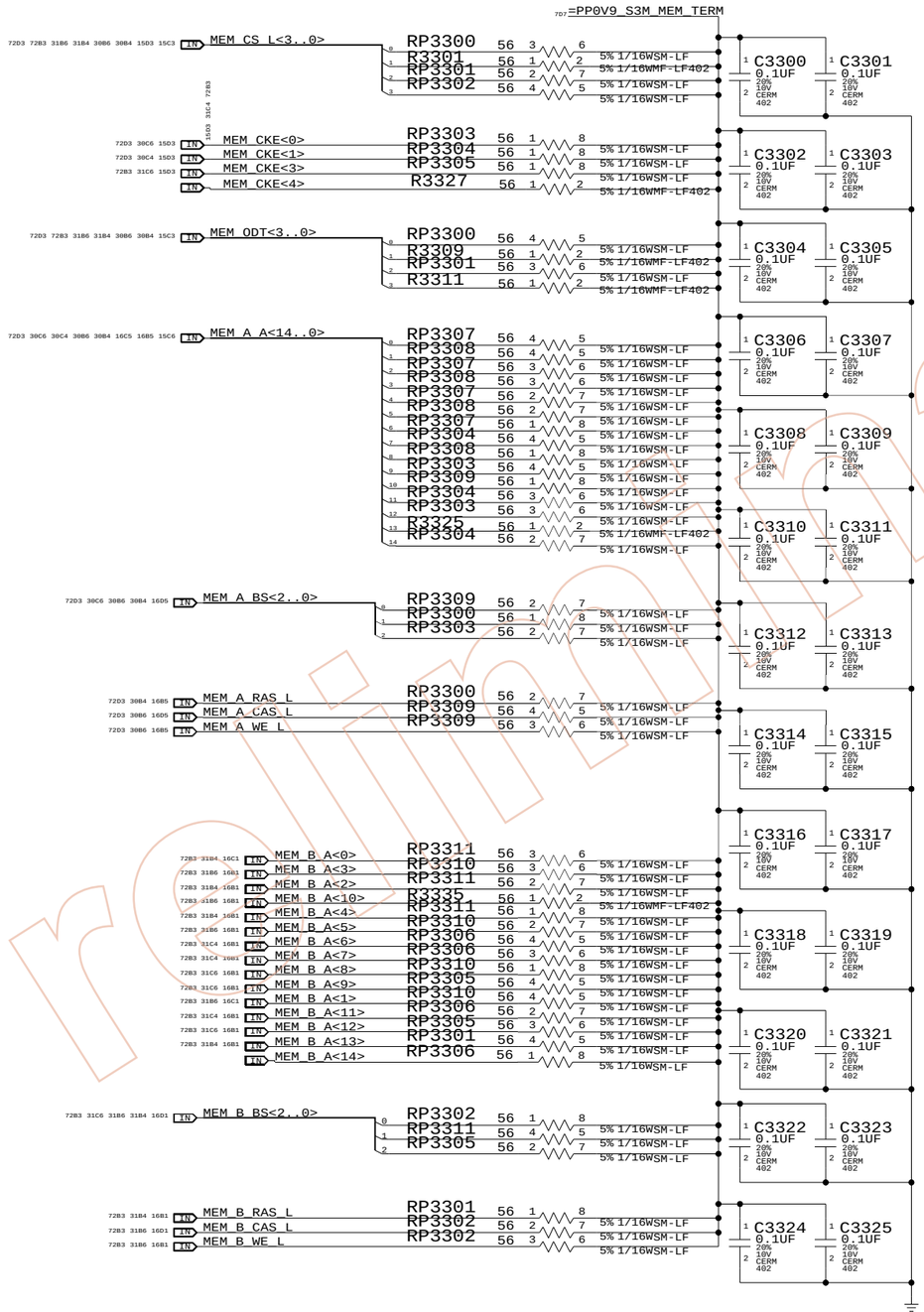
C3222 2.2UF 20% 4V X5R 402
C3221 0.1UF 20% 10V CERM 402

DDR2 SO-DIMM Connector B		
SYNC_MASTER=MEMORY	SYNC_DATE=06/20/2005	
NOTICE OF PROPRIETARY PROPERTY		
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING I TO MAINTAIN THE DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART		
APPLE INC.	SIZE D / DRAWING NUMBER 051-7559 / REV. H	
	SCALE NONE	SHT 32 OF 106

Preliminary

WWW.AliSaler.Com

One cap for each side of every RPAK, one cap for every two discrete resistors
BOMOPTION shown at the top of each group applies to every part below it



LAYOUT NOTE:PLACE ONE CAP CLOSE TO EVERY TWO PULLUP RESISTORS TERMINATED TO PP0V9_S0_MEM_TERM

Memory Active Termination

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

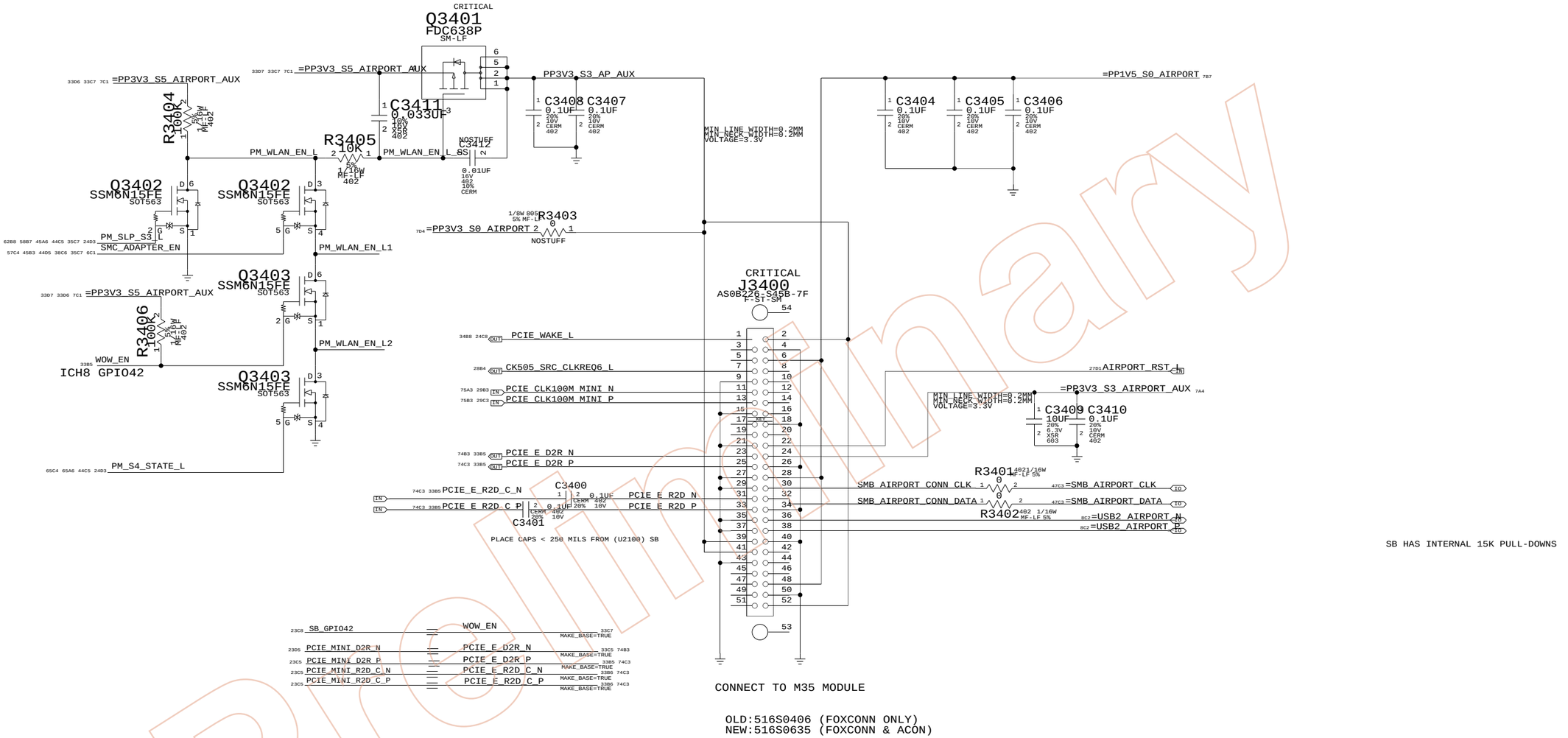
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE

SHT 33 OF 106

WWW.AliSaler.Com



Preliminary

AIRPORT CONNECTOR

SYNC_MASTER=ENET SYNC_DATE=08/19/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE SHT 34 OF 106

WWW.AliSaler.Com

Page Notes

Power aliases required by this page:
- =PP3V3_ENET_PHY (EC / Ultra)
- =PP1V8R2V5_ENET_PHY (2.5V / 1.8V)
- =YUKON_EC_PP2V5_ENET (2.5V / GND)
- =PP1V2_ENET_PHY

Signal aliases required by this page:
- =ENET_CLKREQ_L (NC/TP for Yukon EC)
- =ENET_VMAIN_AVLBL

BOM options provided by this page:
YUKON_EC - Selects Yukon EC RSET value.
YUKON_ULTRA - Selects Yukon Ultra RSET.

NOTE: Yukon IC and EEPROM are OMITted on this page. Proper part numbers must be called out elsewhere.

NOTE: See bottom of page for instructions for dual Yukon EC / Yukon Ultra schematic support.

=PP1V2_ENET_PHY

Yukon EC		Yukon Ultra	
No link:	171 mA	No link:	130 mA
10 Mbps:	179 mA	10 Mbps:	130 mA
100 Mbps:	203 mA	100 Mbps:	150 mA
1000 Mbps:	426 mA	1000 Mbps:	290 mA

C3700 4.7UF 20% 6.3V CERM 603; C3701–C3708 0.1UF 10% 16V X5R 402 (C3708: 0.001UF 10% 50V CERM 402)

=PP3V3_ENET_PHY

Yukon EC		Yukon Ultra	
No link:	4 mA	No link:	60 mA
10 Mbps:	4 mA	10 Mbps:	70 mA
100 Mbps:	4 mA	100 Mbps:	70 mA
1000 Mbps:	4 mA	1000 Mbps:	80 mA

C3710 4.7UF 20% 6.3V CERM 603; C3711–C3713 0.1UF 10% 16V X5R 402; C3714 0.001UF 10% 50V CERM 402; C3715 0.001UF 10% 50V CERM 402

L3720 FERR-120-OHM-1.5A 0402-LF

=PP1V8R2V5_ENET_PHY — PP1V8R2V5_ENET_PHY_AVDD MIN_LINE_WIDTH=0.4 mm MIN_NECK_WIDTH=0.22 mm VOLTAGE=1.8V (EC:2.5V)

Yukon EC (2.5V)		Yukon Ultra (1.8V)	
No link:	82 mA	No link:	0 mA
10 Mbps:	108 mA	10 Mbps:	30 mA
100 Mbps:	126 mA	100 Mbps:	40 mA
1000 Mbps:	218 mA	1000 Mbps:	150 mA

C3720 4.7UF 20% 6.3V CERM 603; C3721–C3723 0.1UF 10% 16V X5R 402; C3724 0.001UF 10% 50V CERM 402

=YUKON_EC_PP2V5_ENET
Yukon EC: Alias to PP1V8R2V5_ENET_PHY_AVDD, add 1x 0.1uF & 1x 0.001uF caps
Yukon Ultra: Alias to GND

PCIE_ENET_D2R_P — C3735 0.1UF 10% 16V X5R 402 — PCIE_ENET_D2R_C_P
PCIE_ENET_D2R_N — C3736 0.1UF 10% 16V X5R 402 — PCIE_ENET_D2R_C_N
PCIE_ENET_R2D_C_P — C3730 0.1UF 10% 16V X5R 402 — PCIE_ENET_R2D_P
PCIE_ENET_R2D_C_N — C3731 0.1UF 10% 16V X5R 402 — PCIE_ENET_R2D_N
PLACEMENT_NOTE=Place C3730 close to southbridge.
PLACEMENT_NOTE=Place C3731 close to southbridge.
PCIE_CLK100M_ENET_P
PCIE_CLK100M_ENET_N
Yukon EC: Pin 42 should be NC (or TP) net.
=ENET_CLKREQ_L
PCIE_WAKE_L
ENET_RESET_L

ENET_MDI_P<0> / ENET_MDI_N<0> — R3740 49.9 1% 1/16W MF-LF 402; R3741 49.9 1% 1/16W MF-LF 402; C3740 0.001UF 10% 50V CERM 402 — ENET_MDI0
ENET_MDI_P<1> / ENET_MDI_N<1> — R3742 49.9 1% 1/16W MF-LF 402; R3743 49.9 1% 1/16W MF-LF 402; C3742 0.001UF 10% 50V CERM 402 — ENET_MDI1
ENET_MDI_P<2> / ENET_MDI_N<2> — R3744 49.9 1% 1/16W MF-LF 402; R3745 49.9 1% 1/16W MF-LF 402; C3744 0.001UF 10% 50V CERM 402 — ENET_MDI2
ENET_MDI_P<3> / ENET_MDI_N<3> — R3746 49.9 1% 1/16W MF-LF 402; R3747 49.9 1% 1/16W MF-LF 402; C3746 0.001UF 10% 50V CERM 402 — ENET_MDI3
SIGNAL_MODEL=EMPTY

CRITICAL Y3750 SM-3.2X2.5MM 25.0000M 16pF; C3750 15PF 5% 50V CERM 402; C3751 15PF 5% 50V CERM 402; NC NC
ENET_CLK25M_XTALI
ENET_CLK25M_XTALO

U3700 88E8058 QFN CRITICAL

Pin	Signal
49	TX_P
50	TX_N
54	RX_P
53	RX_N
55	REFCLKP
56	REFCLKN
42	CLKREQ* (EC:NO CONNECT)
6	WAKE*
1	PERST*
17	MDIP0
18	MDIN0
20	MDIP1
21	MDIN1
26	MDIP2
27	MDIN2
30	MDIP3
31	MDIN3
15	XTALI
14	XTALO
65	THRML_PAD

PCI EXPRESS
MEDIA
MAIN CLK

NC_32 NC_51 NC_52 NC_57 NC_64 AVDD0 AVDD1 AVDD2 AVDD3 AVDDH VDDO_TTL0 VDDO_TTL1 VDDO_TTL2 VDDO_TTL3 AVDDH VDD0 VDD1 VDD2 VDD3 VDD4 VDD5 VDD6 VDD7
EC:AVDD 2.5V

R3760 4.7K 5% 1/10W MF-LF 402

ANALOG
LOM_DISABLE* 10 — ENET_LOM_DIS_L
VAUX_AVLBL 12
SWITCH_VAUX 9 NC
VMAIN_AVLBL 47 — Must be high in S0 state (can use PP3V3_S0 as input) =ENET_VMAIN_AVLBL
SWITCH_VCC 11 NC
EC:CTRL25 CTRL18 4 — TP_YUKON_CTRL18
CTRL12 3 — TP_YUKON_CTRL12
RSET 16 — YUKON_RSET

YUKON_ULTRA
R3765 4.99K 1% 1/16W MF-LF 402
If characterization shows eye height is too small, make R3765 smaller

LED
LED_ACT* 59 NC
LED_LINK10/100* 60 NC
LED_LINK1000* 62 NC
LED_DUPLEX* 63 NC

SPI
(IPU) SPI_DO 34 NC
(IPU) SPI_DI 35 NC
(IPU) SPI_CLK 37 NC
(IPU) SPI_CS 36 NC

TWSI
(IPU) VPD_CLK 38 — YUKON_VPD_CLK
(IPU) VPD_DATA 41 — YUKON_VPD_DATA

TEST/RSVD
(IPD) TESTMODE 46
RSVD_24 24 NC
RSVD_25 25 NC
RSVD_29 29 NC
RSVD_43 43 NC

VPD ROM
C3780 0.1UF 10% 16V X5R 402
R3780 4.7K 5% 1/10W MF-LF 402
R3781 4.7K 5% 1/10W MF-LF 402
U3780 M24C08 SO8 CRITICAL
VCC E2 NC1 NC0 WC* VSS SDA SCL OMIT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
114S0285	1	RES,4.87K,1%,1/16W,0402,LF	R3760		YUKON_EC

To support Yukon EC and Ultra on the same board:
- Alias =YUKON_EC_PP2V5_ENET to PP1V8R2V5_ENET_PHY_AVDD, add 1x 0.1uF and 1x 0.001uF caps
- Use 0-ohm resistors or variable supply to provide 1.8V or 2.5V to =PP1V8R2V5_ENET_PHY
- Connect =ENET_CLKREQ_L to clock generator via 0-ohm resistor (BOMOPTION: YUKON_ULTRA)
- Use YUKON_EC and YUKON_ULTRA BOMOPTIONs to select stuffed part

Ethernet (Yukon)
SYNC_MASTER=USB SYNC_DATE=10/07/2006

NOTICE OF PROPRIETARY PROPERTY
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

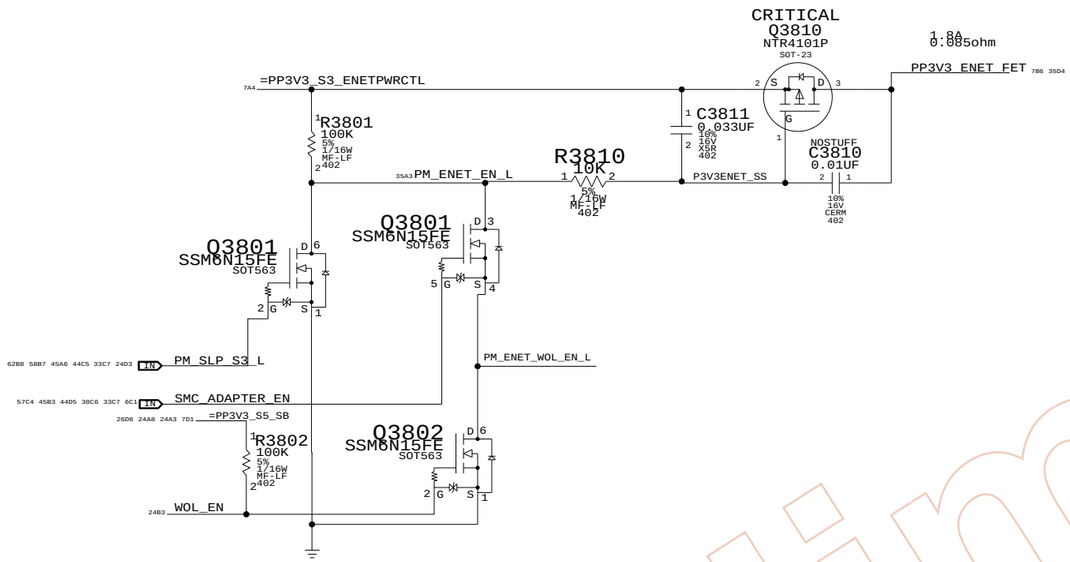
APPLE INC.
SIZE D | DRAWING NUMBER 051-7559 | REV. H
SCALE NONE | SHT 37 OF 106

WWW.AliSaler.Com

ENET Enable Generation

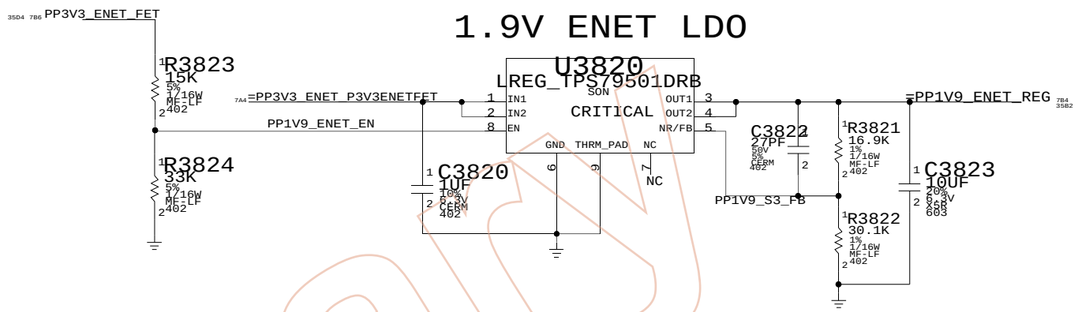
"ENET" = "S0" || AC

3.3V ENET FET



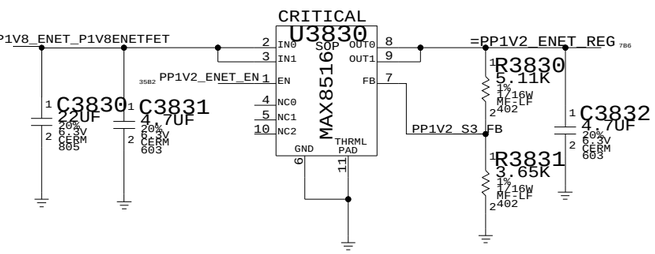
Name	PM_SLP_S3_L	SMC_ADAPTER_EN	PM_ENET_EN_L	PM_ENET_EN	Yukon Power
Logic	S0	AC			Powered by S3
S0 on Battery	High (3.3V)	Low (0V)	Low (0V)	High (3.3V)	Power
S3 on Battery	Low (0V)	Low (0V)	High (3.3V)	Low (0V)	Power
S0 on AC	High (3.3V)	High (3.3V)	Low (0V)	High (3.3V)	Power
S3 on AC	Low (0V)	High (3.3V)	Low (0V)	High (3.3V)	Power
S5 on anything	N/A	N/A	N/A	N/A	No Power

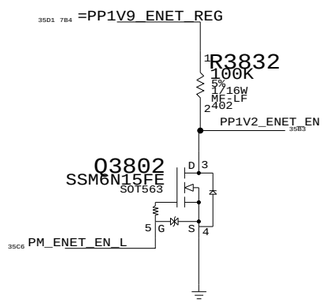
1.9V ENET LDO



Vout = 1.2246V * (1 + R3821 / R3822)

1.2V ENET LDO





Preliminary

Yukon Power Control

SYNC_MASTER=USB SYNC_DATE=10/07/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

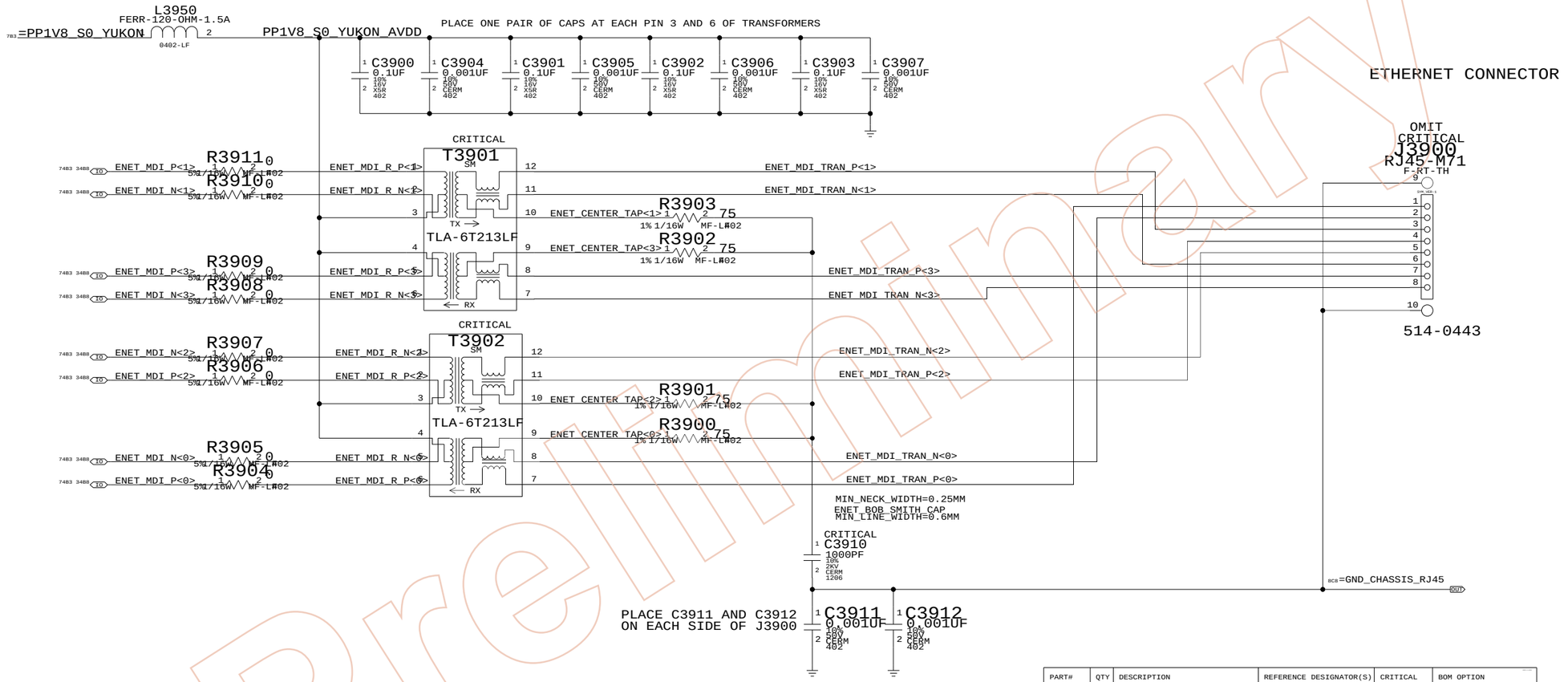
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE D | DRAWING NUMBER 051-7559 | REV. H

SCALE NONE | SHT 38 OF 106

WWW.AliSaler.Com



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0443	1	CONN,8P RJ-45 JACK,TH,MG3,LF	J3900	CRITICAL	NORMAL
514-0475	1	CONN,8P RJ-45 JACK,TH,BLACK,LF	J3900	CRITICAL	FANCY

ETHERNET CONNECTOR

SYNC_MASTER=USB SYNC_DATE=09/14/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	39	106

Preliminary

WWW.AliSaler.Com

PAGE NOTES

INPUT

=PP3V3_S0_FW - 3.3V POWER FOR FIREWIRE (MOBILE: OFF DURING SLEEP)
=PP3V3_S0_PCI - 3.3V POWER FOR PCI FIREWIRE (MOBILE: OFF DURING SLEEP)
PCI_GNT3_L - PCI GRANT FROM SB
PCI_CLK_FW - NEED TO REFERENCE TO ALIAS PAGE
PCI_RST_L - PCI RESET FROM SB
FW_PC0 - FIREWIRE POWER CLASS IDENTIFIER

INPUT/OUTPUT

PCI_AD<0..31>,PCI_C_BE_L<0..3>,PCI_FRAME_L,PCI_IRDY_L,PCI_TRDY_L,
PCI_DEVSEL_L, PCI_STOP_L, PCI_PAR, PCI_PERR_L, PCI_SERR_L
FW_A_TPA_P/N, FW_A_TPB_P/N, FW_A_TPBIAS - PORT 0 FIREWIRE DIFF PAIRS
FW_B_TPA_P/N, FW_B_TPB_P/N, FW_B_TPBIAS - PORT 1 FIREWIRE DIFF PAIRS
FW_C_TPA_P/N, FW_C_TPB_P/N, FW_C_TPBIAS - PORT 2 FIREWIRE DIFF PAIRS

OUTPUT

PCI_REQ3_L - PCI REQUEST TO SB
PM_CLKRUN_L - CLOCK-RUN PCI PROTOCOL
INT_PIRQD_L - INTERRUPT TO SB
PCI_PME_FW_L - DEDICATED PME FOR FIREWIRE (SB GPIO1)

PAGE HISTORY

5/19/2005 - FIRST REVISION OF PAGE
6/20/2005 - BGA VERSION OF FW323-06 ADDED
6/21/2005 - CHANGED INT_IO_INT_PIRQD_L (PER ARCHITECTURAL DEFINITION)
6/21/2005 - CHANGED PCI_ID TO AD16 (PER ARCHITECTURAL DEFINITION)
6/21/2005 - CHANGED REQ3_L TO REQ3/GNT3 (PER ARCHITECTURAL DEFINITION)
6/22/2005 - ADDED 510K PULL-DOWN ON RST# AND REMOVED CONNECTION TO PLT_RST_L
6/22/2005 - CHANGED CLK_PME DIFF PAIR NAMES TO BE BE-DSE COMPLIANT
6/22/2005 - REMOVED CONSTRAINT SETS AS THEY WILL BE MANAGED ON BOARD SIDE
6/22/2005 - REMOVED C4421 - REDUNDANT
6/22/2005 - BRING OUT BGA CONNECTION TO BE CONNECTED ON PORT PAGE
7/26/2005 - CONNECTED PIN E10 TO GND

MOBILE TURNS OFF CONTROLLER POWER DURING SLEEP
0.001A DURING SLEEP

=PP3V3_S3_FW

PLACE ONE CAP PER TWO PINS STARTING WITH C4024 ON VDD0

C4024 10UF 20% 6.3V X5R 603
C4018 0.1UF 10% 16V X5R CERM 402
C4022 0.1UF 10% 16V X5R CERM 402
C4026 0.1UF 10% 16V X5R CERM 402
C4028 0.1UF 10% 16V X5R CERM 402
C4030 0.1UF 10% 16V X5R CERM 402
C4032 0.1UF 10% 16V X5R CERM 402

L4000
600-OHM-300MA
0402

PLACE ONE CAP PER TWO PINS STARTING WITH C4016 ON VDDA0

PP3V3_S3_FW_AVDD
VOLTAGE=3.3V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.2MM

C4016 10UF 20% 6.3V X5R 603
C4017 0.1UF 10% 16V X5R 402
C4029 0.1UF 10% 16V X5R 402
C4025 0.1UF 10% 16V X5R 402

=PP3V3_S3_PCI

G4 VDD0
N1 VDD1
N2 VDD2
K5 VDD3
K9 VDD4
K7 VDD5
L13 VDD6
H13 VDD7
A2 VDD8
D10 VDDA0
A13 VDDA1
B13 VDDA2
A7 VDDA3
A8 VDDA4
D6 VDDA5

CONNECT TO VDD FOR 3.3V OPERATION

G13 PCI_VIOS

CRITICAL
U4000
FW32306
BGA

PCI_AD<0>	F10	PCI_AD0
PCI_AD<1>	G10	PCI_AD1
PCI_AD<2>	H10	PCI_AD2
PCI_AD<3>	H12	PCI_AD3
PCI_AD<4>	J13	PCI_AD4
PCI_AD<5>	J12	PCI_AD5
PCI_AD<6>	K13	PCI_AD6
PCI_AD<7>	K10	PCI_AD7
PCI_AD<8>	L12	PCI_AD8
PCI_AD<9>	M13	PCI_AD9
PCI_AD<10>	L11	PCI_AD10
PCI_AD<11>	M12	PCI_AD11
PCI_AD<12>	M11	PCI_AD12
PCI_AD<13>	N12	PCI_AD13
PCI_AD<14>	M10	PCI_AD14
PCI_AD<15>	N11	PCI_AD15
PCI_AD<16>	M4	PCI_AD16
PCI_AD<17>	N5	PCI_AD17
PCI_AD<18>	N4	PCI_AD18
PCI_AD<19>	M3	PCI_AD19
PCI_AD<20>	M2	PCI_AD20
PCI_AD<21>	N3	PCI_AD21
PCI_AD<22>	K4	PCI_AD22
PCI_AD<23>	M1	PCI_AD23
PCI_AD<24>	K2	PCI_AD24
PCI_AD<25>	J4	PCI_AD25
PCI_AD<26>	K1	PCI_AD26
PCI_AD<27>	J2	PCI_AD27
PCI_AD<28>	J1	PCI_AD28
PCI_AD<29>	H2	PCI_AD29
PCI_AD<30>	H4	PCI_AD30
PCI_AD<31>	H1	PCI_AD31
PCI_C_BE_L<0>	K12	PCI_CBE0*
PCI_C_BE_L<1>	M9	PCI_CBE1*
PCI_C_BE_L<2>	L3	PCI_CBE2*
PCI_C_BE_L<3>	L1	PCI_CBE3*
PCI_PAR	N10	PCI_PAR
PCI_FRAME_L	N6	PCI_FRAME*
PCI_IRDY_L	M6	PCI_IRDY*
PCI_TRDY_L	N7	PCI_TRDY*
PCI_DEVSEL_L	N8	PCI_DEVSEL*
PCI_STOP_L	M7	PCI_STOP*
FW_PCI_IDSEL	L2	PCI_IDSEL
PCI_FW_REQ_L	E2	PCI_REQ*
PCI_FW_GNT_L	E1	PCI_GNT*
PCI_PERR_L	M8	PCI_PERR*
PCI_SERR_L	N9	PCI_SERR*
PCI_CLK33M_FW	G2	PCI_CLK
PM_CLKRUN_L	D1	CLKRUN*
FW_PCI_RST_L	F1	PCI_RST*
INT_PIRQD_L	D2	PCI_INTA*
PCI_PME_FW_L	F2	PCI_PME*

R4031 22 5% 1/16W MF-LF 402
R4032 100 1% 1/16W MF-LF 402

THIS IS FROM ICH-8
PLACE R4032 VERY CLOSE TO SB

197S0030 3.2MMX2.5MM
CRITICAL
Y4003
SM-3 2X2.5MM
24.576MHZ

R4000 390 5% 1/16W MF-LF 402
C4011 15PF 5% 50V CERM 402
C4012 15PF 5% 50V CERM 402

NEED TO CHECK CRYSTAL LOAD CAPACITANCE

XI	A5	FW_XT
XO	B5	FW_XO
RESET*	B4	FW_PWRON_RST_L
R1	A6	FW_R1
R0	B7	FW_R0

R4052 2.1K 1% 1/16W MF-LF 402
C4020 0.1UF 10% 16V X5R 402
R4020 510K 5% 1/16W MF-LF 402

SPEC RECOMMENDS 2.49K

TPBIAS0	B8	FW_A_TPBIAS
TPA0_P	A9	FW_A_TPA_P
TPA0_N	B9	FW_A_TPA_N
TPB0_P	B10	FW_A_TPB_P
TPB0_N	A10	FW_A_TPB_N
TPBIAS1	D8	FW_B_TPBIAS
TPA1_P	A11	FW_B_TPA_P
TPA1_N	B11	FW_B_TPA_N
TPB1_P	B12	FW_B_TPB_P
TPB1_N	A12	FW_B_TPB_N
TPBIAS2	C13	FW_C_TPBIAS
TPA2_P	C11	FW_C_TPA_P
TPA2_N	C12	FW_C_TPA_N
TPB2_P	D13	FW_C_TPB_P
TPB2_N	D12	FW_C_TPB_N

MODE_420	M5	MODE FOR EXTERNAL LINK
MODE_A	B6	
PC0	E12	FW_PC0
PC1	F13	
PC2	F12	
CONTENDER	G12	LOW = NOT BUS MANAGER
CARDBUSN	B1	LOW = PCI OPERATION
MPCI_ACTN_323	E10	

DUAL PORT DEVICES ARE POWER CLASS 4 (‘100’)
SINGLE PORT DEVICES ARE POWER CLASS 0 (‘000’)

MANUFACTURING TEST PINS

TEST0	C2	FW_TEST0
TEST1	C1	FW_TEST1
PTEST	A4	FW_PTEST
SE	A3	FW_SE
SM	B3	FW_SM

R4033 47 5% 1/16W MF-LF 402
R4034 47 5% 1/16W MF-LF 402
R4035 47 5% 1/16W MF-LF 402
R4036 47 5% 1/16W MF-LF 402
R4037 47 5% 1/16W MF-LF 402

A1 VSS0
B2 VSS1
C3 VSS2
D4 VSS3
E4 VSS4
E5 VSS5
F4 VSS6
F6 VSS7
F7 VSS8
F8 VSS9
G1 VSS10
G6 VSS11
G7 VSS12
G8 VSS13
H6 VSS14
H7 VSS15
H8 VSS16
J5 VSS17
J9 VSS18
J10 VSS19
K8 VSS20
K9 VSS21
N13 VSS22
E13 VSSA0
E9 VSSA1
D9 VSSA2
D7 VSSA3
D5 VSSA4

FIREWIRE CONTROLLER

SYNC_MASTER=ENETSYNC_DATE=08/30/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 40 OF 106	

WWW.AliSaler.Com

Page Notes

INPUT:
=PPBUS_FW - PORT POWER
=PP3V3_S5_FW - DIGITAL POWER
=GND_CHASSIS_FW_PORT0 - CHASSIS GROUND
=FWPWR_PWRON - ADDITIONAL POWER CONTROL

INPUT/OUTPUT:
FW_TPA0_P/N,FW_TPB0_P/N,FW_TPBIAS0 - FIREWIRE DIFF PAIRS

OUTPUT:
FW_PC0 - POWER CLASS IDENTIFIER (SINGLE PORT - TIE LOW)

PAGE HISTORY

5/19/05 - INITIAL REVISION
6/22/05 - CHANGED DIFF PAIR NAMES TO MATCH REUSE
6/22/05 - REMOVED CONSTRAINTS BECAUSE USING ALLEGRO CONST MANAGER
6/22/05 - CONNECTED FW_PC0 FOR SINGLE PORT
7/26/05 - UPDATED LATE-VG POWER RAIL CIRCUIT FROM M1
7/26/05 - CHANGED CONNECTOR PORT NAMING TO PORT0
7/26/05 - SWITCHED TO 514-0124 FOR PRE-PROTO CONNECTOR
7/26/05 - REMOVED R4529 - IT HASN'T BEEN STUFFED FOR MANY PRODUCTS
7/26/05 - CHANGED FL4500 TO 1.1A VERSION
7/26/05 - REMOVED ETHERNET LOW-POWER MODE CIRCUIT
7/26/05 - UPDATED SIGNAL NAMES FOR FW PORT POWER ENABLE

1394b implementation based on Apple
FireWire Design Guide (FWDG 0.6, 5/14/03)

PPBUS_S5_FWPWRSW_F
VOLTAGE=18.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM

CRITICAL
FL4390
1.1A-24V
MINISMDC

=PPBUS_S5_FWPWRSW 7B1

CRITICAL
Q4390
FDC638P
SM-LF

PPFW_SWITCH 6B2
VOLTAGE=19V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM

D4390
SM
CRS08
CRITICAL

Cable Power

PPFW_PORT0_VP_F
VOLTAGE=16.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM

L4310
FERR-250-OHM
SM

PPFW_PORT0_VP
VOLTAGE=16.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM

R4390 4.7K 5% 1/16W MF-LF 402
C4390 0.01UF 10% 25V X7R 402
C4310 0.001UF 10% 50V CERM 402

FWPWR_EN_L_DIV
MIN_LINE_WIDTH=0.15MM
MIN_NECK_WIDTH=0.15MM

Enables port power whenever
machine AC Adapter is plugged
or system at run state with battery only

R4391 3.3K 5% 1/16W MF-LF 402

FWPWR_EN_L
MIN_LINE_WIDTH=0.15MM
MIN_NECK_WIDTH=0.15MM

CRITICAL
D4391
HN2D01JEF
SOT665

R4394 10K 5% 1/16W MF-LF 402

SMC_ADAPTER_EN 45B3 44D5 35C7 33C7 6C1 57E4
FWPWR_ACIN

=PP3V3_S0_FW 7D4

Q4392
SSM6N15FE
SOT563

FWPWR_EN

"Snapback" & "Late VG" Protection

FWPWR_EN_AND

R4395 470K 5% 1/16W MF-LF 402

Q4392
SSM6N15FE
SOT563

FW_PORTPWR_EN 38A4

PORT POWER CLASS

0 FOR SINGLE PORT
1 FOR DUAL PORT

FW_PC0 37A3

[LATE VG NOTES]
CURRENT THROUGH THE BIAS RESISTOR SHOULD BE 5MA FOR A VOLTAGE DROP TO 2.2V
IT IS 2.2V INSTEAD OF 2.7V BECAUSE THE SNAPBACK ESD DIODES HAVE A 0.5V DROP

PP2V4_FWLATEVG 38A7

CRITICAL
D4320
BAV99DW-X-F
SOT-363

C4320 0.01UF 10% 16V CERM 402
C4321 0.01UF 10% 16V CERM 402

CRITICAL
D4320
BAV99DW-X-F
SOT-363

CRITICAL
FL4320
TCM2010-100-4P
SM

FW_A_TPBIAS 37B3

R4300 56.2 1% 1/16W MF-LF 402
R4301 56.2 1% 1/16W MF-LF 402
C4300 0.33UF 10% 6.3V CERM-X5R 402

FW_A_TPA_P 37B3
FW_A_TPA_N 37B3
FW_A_TPB_P 37B3
FW_A_TPB_N 37B3

FW_PORT0_TPA_P
FW_PORT0_TPA_N
FW_PORT0_TPB_P
FW_PORT0_TPB_N

R4302 56.2 1% 1/16W MF-LF 402
R4303 56.2 1% 1/16W MF-LF 402

FW_PORT0_TPB

C4301 220PF 5% 25V CERM 402
R4304 4.99K 1% 1/16W MF-LF 402

CRITICAL
D4321
BAV99DW-X-F
SOT-363

C4322 0.01UF 10% 16V CERM 402
C4323 0.01UF 10% 16V CERM 402

CRITICAL
D4321
BAV99DW-X-F
SOT-363

FW_PORT0_TPA_P_FL
FW_PORT0_TPA_N_FL
FW_PORT0_TPB_P_FL
FW_PORT0_TPB_N_FL

1394A
PORT 0
OMIT
CRITICAL
J4300
1394A
F-RT-TH3

TPO (TPA+)
TPO# (TPA-)
TPI (TPB+)
TPI# (TPB-)
VP
VGND

(PPFW_PORT0_VP)
(GND_FW_PORT0_VGND)

C4324 0.01UF 10% 50V X7R 603-1
C4325 0.01UF 10% 16V CERM 402

514-0456

=GND_CHASSIS_FW_UPPER 8A6
=GND_CHASSIS_FW_DOWN 8C8

LATE-VG DETECTION CIRCUIT

R4350 330 5% 1/16W MF-LF 402

=PP3V3_S5_FWLATEVG 38A6 7D1

NO STUFF
C4352 0.001UF 10% 50V CERM 402

PP2V4_FWLATEVG 38C5
VOLTAGE=2.5V
MIN_LINE_WIDTH=0.35MM
MIN_NECK_WIDTH=0.25MM

CRITICAL
D4350
SOT23
MMBZ5227B

=PP3V3_S5_FWLATEVG 38A8 7D1

R4351 10K 1% 1/16W MF-LF 402
R4352 10K 1% 1/16W MF-LF 402

PP2V4_FWLATEVG

FWLATEVG_3V_REF

C4353 100PF 5% 50V CERM 402
R4353 80.6K 1% 1/16W MF-LF 402

CRITICAL
U4350
TLV7211
SC70

R4354 200K 1% 1/16W MF-LF 402

C4354 0.1UF 10% 16V CERM 402

R4356 2.0M 5% 1/16W MF-LF 402

D4351
1SS418
SOD-723

LATEVG_EVENT_L

FW_PORTPWR_EN 38C5

PLACEHOLDER FOR SMALL PACKAGE DIODE

C4355 0.33UF 10% 6.3V CERM-X5R 402

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0456	1	CONN,6P 1394A RCPT,MIDPLANE,MG3,LF	J4300	CRITICAL	NORMAL
514-0476	1	CONN,6P 1394A RCPT,MIDPLANE,BLACK,LF	J4300	CRITICAL	FANCY

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
155S0369	155S0326	?	FL4320	MURATA ALTERNATIVE

FIREWIRE PORT

SYNC_MASTER=GPU SYNC_DATE=07/17/2006

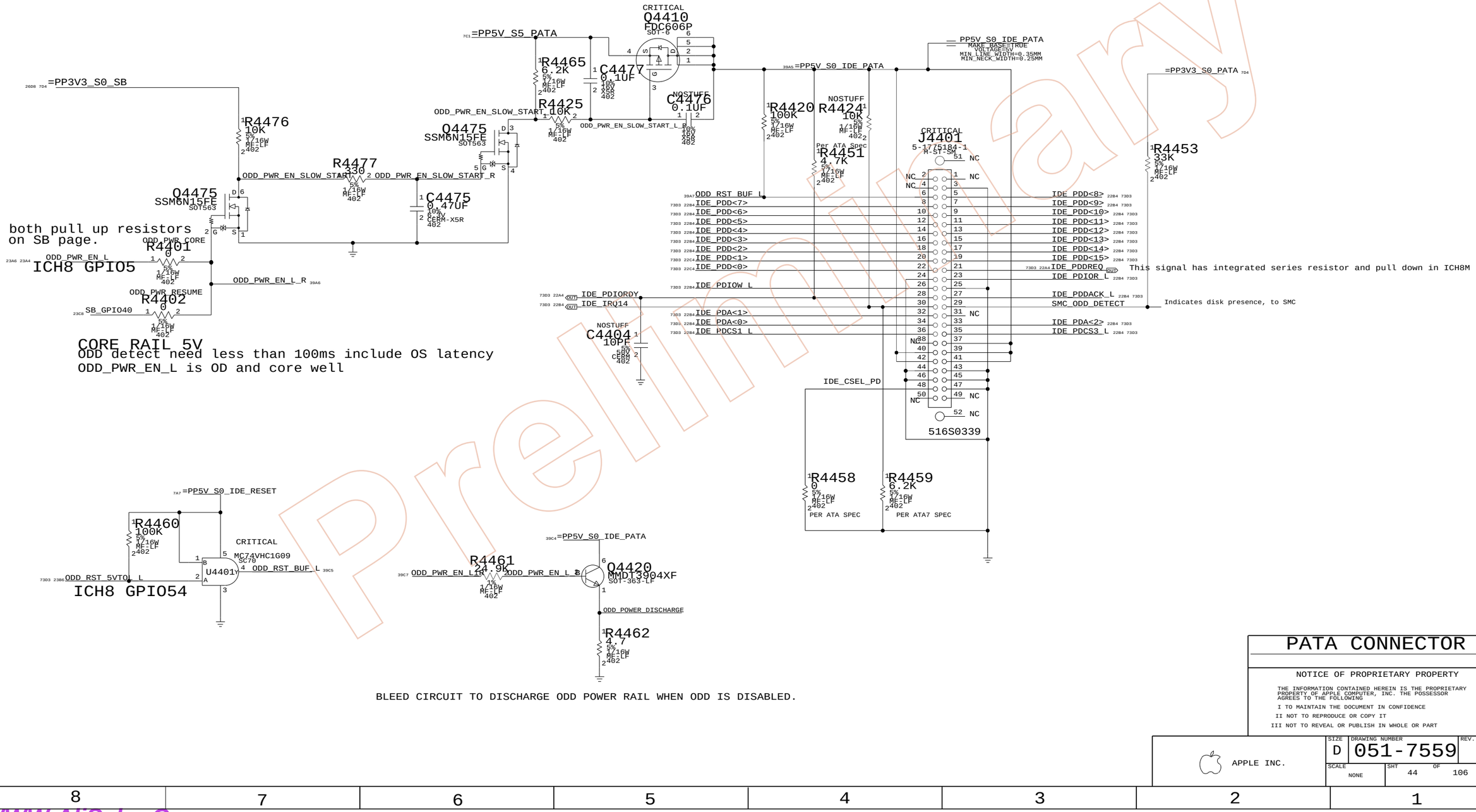
NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 43 OF 106	

Preliminary
WWW.AliSaler.Com



PATA CONNECTOR

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

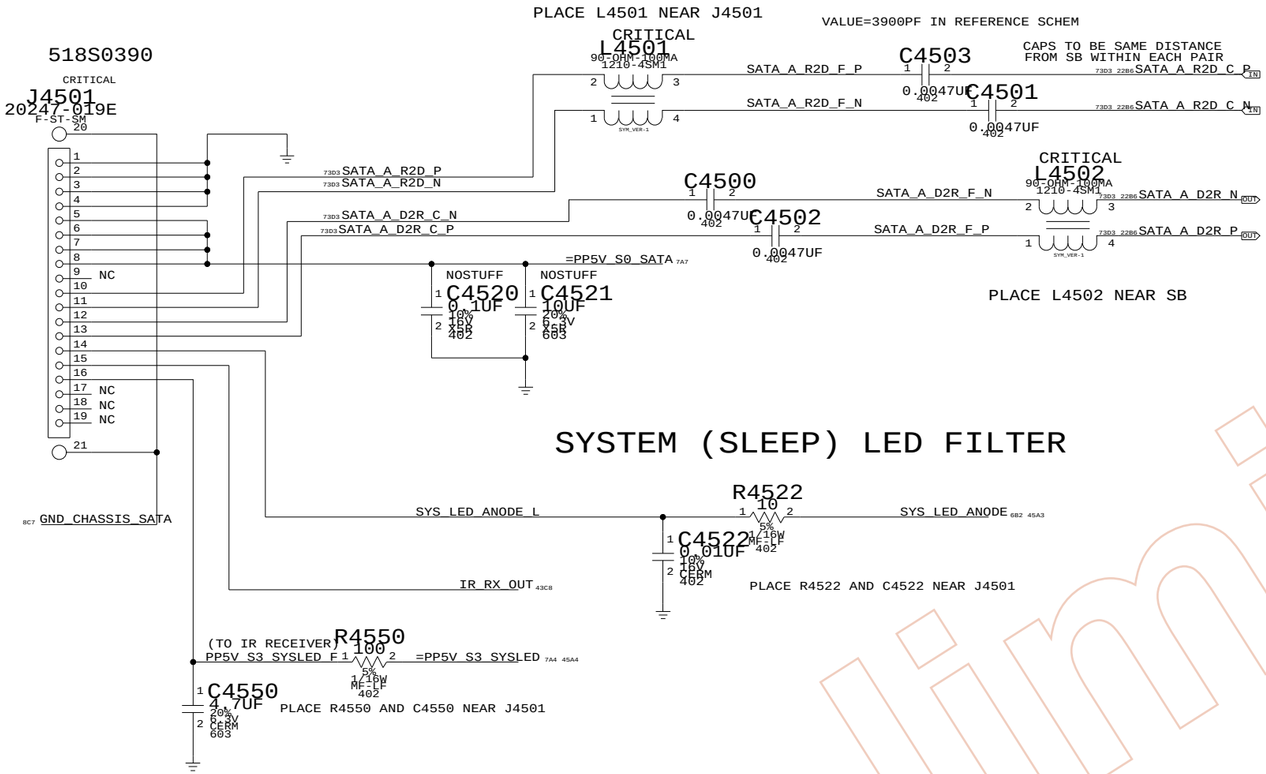
SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	44	106

Preliminary

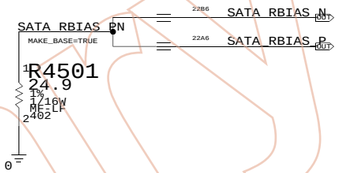
WWW.AliSaler.Com

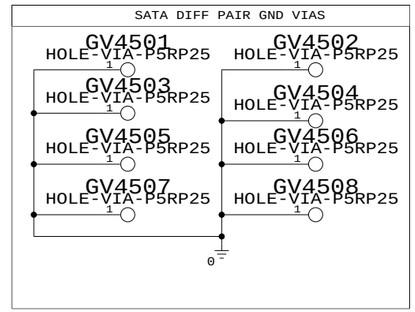
SATA CONNECTOR



SYSTEM (SLEEP) LED FILTER

PLACE NEAR ICH8 PIN





Preliminary

SATA CONNECTOR

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

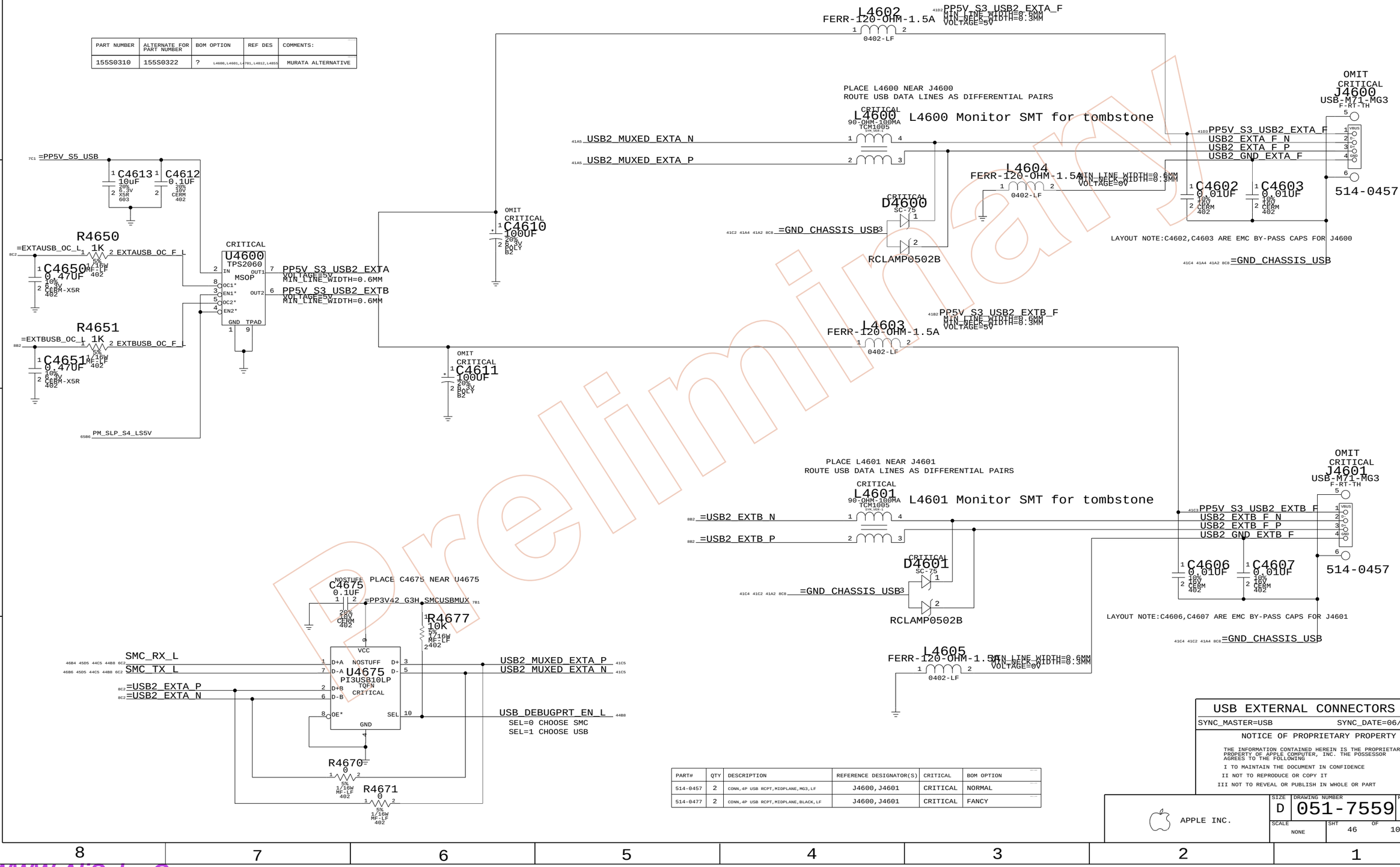
SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	45	106

WWW.AliSaler.Com

USB 2.0 CONNECTORS

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
155S0310	155S0322	?	L4600,L4601,L4701,L4812,L4855	MURATA ALTERNATIVE



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0457	2	CONN,4P USB RCPT,MIDPLANE,MG3,LF	J4600,J4601	CRITICAL	NORMAL
514-0477	2	CONN,4P USB RCPT,MIDPLANE,BLACK,LF	J4600,J4601	CRITICAL	FANCY

USB EXTERNAL CONNECTORS

SYNC_MASTER=USB SYNC_DATE=06/30/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

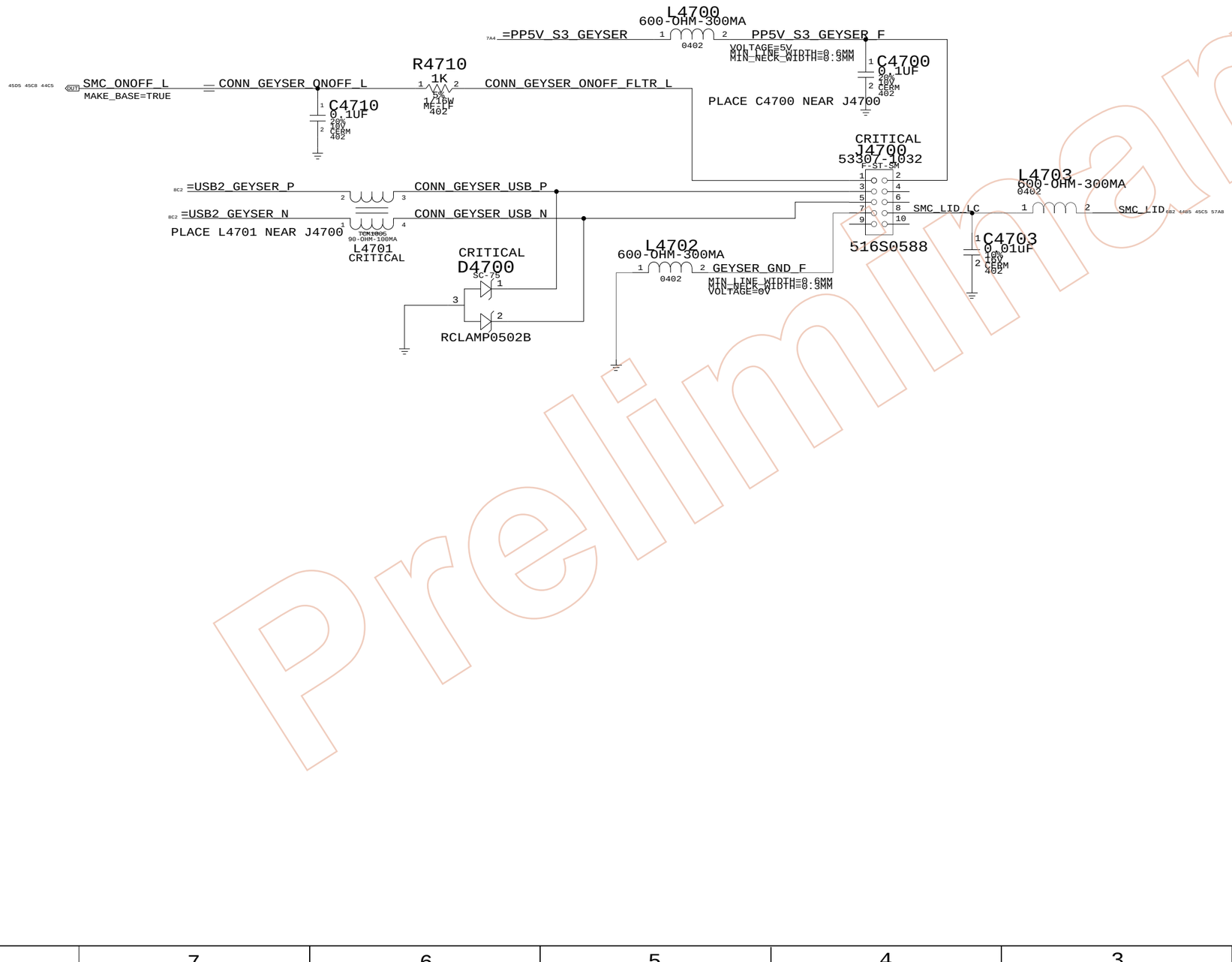
SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE SHT 46 OF 106

Preliminary

WWW.AliSaler.Com

GEYSER AND DIMM0 REMOTE TEMP SENSORS



Preliminary

CONNECTOR MISC

SYNC_MASTER=USB SYNC_DATE=06/29/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

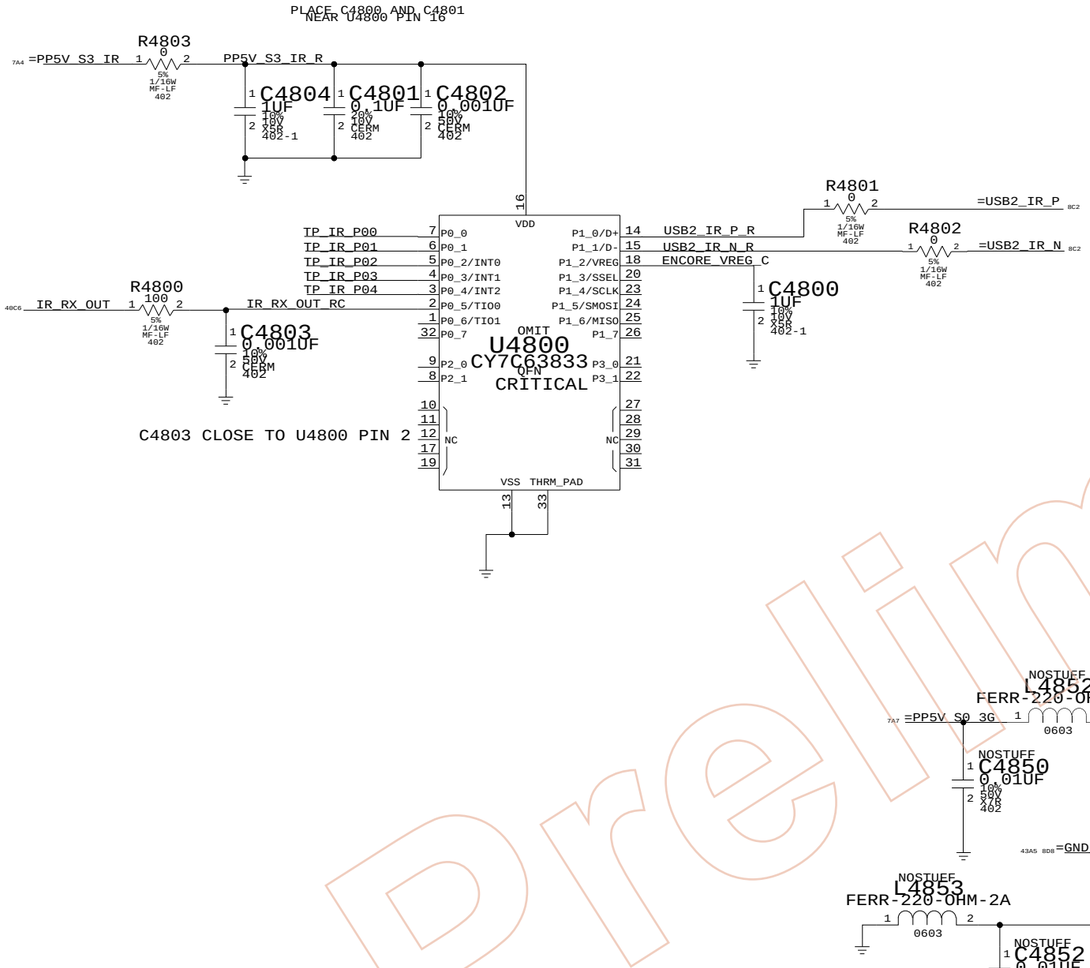
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

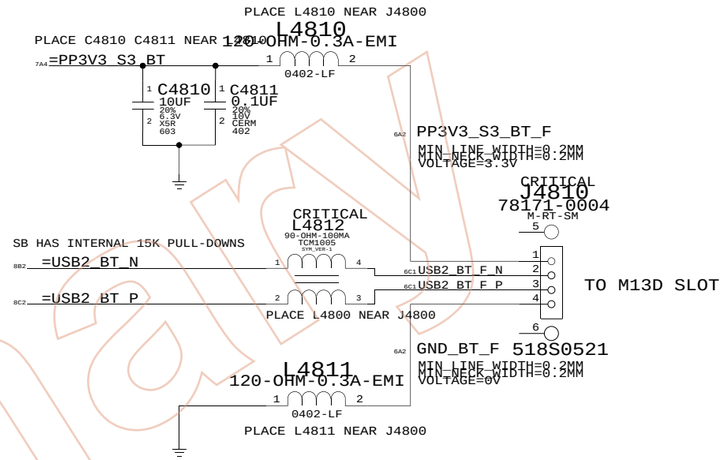
SCALE	SHT	OF
NONE	47	106

WWW.AliSaler.Com

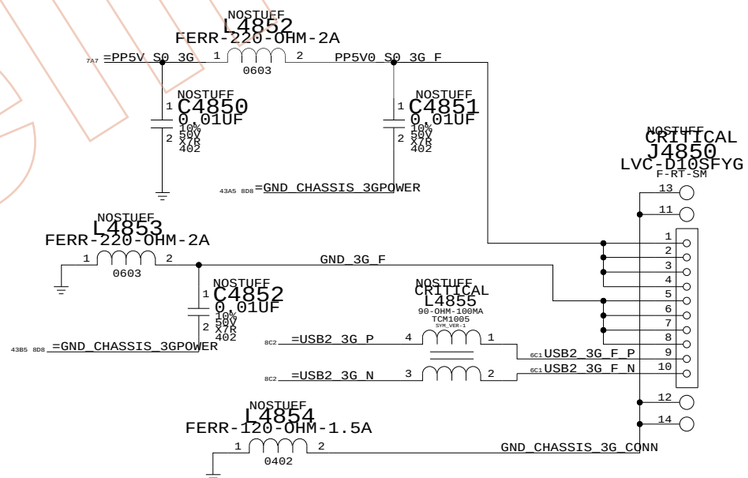
IR CYPRESS ENCORE II USB CONTROLLER



BLUETOOTH



3G CONNECTOR



IR CONTROLLER & BT INTERFACE

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 48 OF 106	

Preliminary

WWW.AliSaler.Com

NOTE: Unused pins have "SMC_Pxx" names. Unused pins designed as outputs can be left floating, those designated as inputs require pull-ups.

OMIT
U4900
SMC_H8S2116
BGA
(1 OF 4)

24C2 OUT	PM_LAN_ENABLE	B12	P10		
44A4 OUT	SMC_RSTGATE_L	C13	P11		
58A3 27A5 6B2 IN	ALL_SYS_PWRGD	A15	P12		
63B5 63B4 45D5 IN	RSMRST_PWRGD	B14	P13		
44B4	SMC_P14	B15	P14		
24C2 OUT	PM_RSMRST_L	C14	P15		
59C7 OUT	IMVP_VR_ON	D12	P16		
24C5 OUT	PM_PWRBTN_L	C15	P17		
44B4	SMC_P20	D13	P20		
44B4	SMC_P21	D14	P21		
44B4	SMC_P22	D15	P22		
44B4	SMC_P23	E12	P23		
66A3 45B6 6C1 OUT	SMC_BATT_TRICKLE_EN_L	E14	P24		
66A4 45B6 6C1 OUT	SMC_BATT_CHG_EN	E15	P25		
44B4	SMC_P26	E13	P26		
44B4	SMC_P27	E14	P27		
46C6 22D4 6D2 BI	LPC_AD<0>	D9	P30/LAD0		
46C6 22D4 6D2 BI	LPC_AD<1>	C9	P31/LAD1		
46C4 22D4 6C2 BI	LPC_AD<2>	A9	P32/LAD2		
46C4 22D4 6C2 BI	LPC_AD<3>	B9	P33/LAD3		
46B6 22D4 6C2 IN	LPC_FRAME_L	D8	P34/LFRAME*		
27C1 IN	SMC_LRESET_L	C8	P35/LRESET*		
75B3 29A5 29A3 IN	PCI_CLK33M_SMC	A8	P36/LCLK		
46B4 24C8 6C2 BI	INT_SERIRQ	D7	P37/SERIRQ		
44A4 OUT	SMC_GFX_THROTTLE_L	A5	P40/TMI0		
45A6 OUT	SMC_SYS_LED	B5	P41/TMO0		
47B3 BI	SMB_MGMT_DATA (OC)	D5	P42/SDA1		
44B4	SMC_P43	C3	P43/TMI1/EXSCK1		
44B4	SMC_P44	B1	P44/TMO1		
44A4	SMC_P45	C2	P45		
44B4	SMC_P46	D3	P46/PWX0/PWM0		
44B4 OUT	SMC_SYS_KBDLED	C1	P47/PWX1/PWM1		
46B6 45D5 44C5 41A8 6C2 OUT	SMC_TX_L	G1	P50		
46B4 45D5 44C5 41A8 6C2 IN	SMC_RX_L	G4	P51		
47D6 BI	SMB_0_S0_CLK (OC)	F2	P52/SCL0		
		L13	P60/KIN0*	SMC_PM_G2_EN	OUT 65C6
		L14	P61/KIN1*	SMC_ADAPTER_EN	OUT 6C1 33C7 35C7 38C6 45B3 57C4
		L15	P62/KIN2*	SMC_P62	44B4
		K12	P63/KIN3*	SMC_P63	44B4
		K13	P64/KIN4*	SMC_P64	44B4
		K14	P65/KIN5*	PM_LAN_PWRGD	IN 45C5
		J12	P66/IRQ6*/KIN6*	SMC_PROCHOT_3_3_L	IN 45D1
		J13	P67/IRQ7*/KIN7*	SMC_P67	45C5
		N12	P70/AN0	SMC_CPU_ISENSE	IN 48C1 59C7
		R13	P71/AN1	SMC_CPU_VSENSE	IN 6B2 48B1
		P13	P72/AN2	SMC_GPU_ISENSE	IN 44A4
		R14	P73/AN3	SMC_GPU_VSENSE	IN 44A4
		P14	P74/AN4	SMC_DCIN_ISENSE	IN 66C2
		R15	P75/AN5	SMC_PBUS_VSENSE	IN 48D6
		N13	P76/AN6	SMC_BATT_ISENSE	IN 66B1
		P15	P77/AN7	SMC_NB_1V25_ISENSE	IN 45B3
		C7	P80/PME*	SMC_WAKE_SCI_L	OUT 24C8
		A7	P81/GA20	SMC_P81	44B4
		B7	P82/CLKRUN*	PM_CLKRUN_L	OUT 6C2 24C8 37A5 46B6
		D6	P83/LPCPD*	PM_SUS_STAT_L	IN 6C2 24D5 46B4
		C6	P84/IRQ3*/TXD1	SMC_TX_L	OUT 6C2 41A8 44B8 45D5 46B6
		A6	P85/IRQ4*/RXD1	SMC_RX_L	IN 6C2 41A8 44B8 45D5 46B4
		B6	P86/IRQ5*/SCK1/SCL1	(OC) SMB_MGMT_CLK	BI 47B3
		K4	P90/IRQ2*	SMC_ONOFF_L	IN 42C8 45C8 45D5
		J2	P91/IRQ1*	SMC_BC_ACOK	IN 6C1 45B6 57C3 57C7 66A6
		J1	P92/IRQ0*	SMC_BS_ALRT_L	IN 6D1 45C5 57A2
		J3	P93/IRQ12*	PM_SLP_S3_L	IN 24D3 33C7 35C7 45A6 58B7 62B8
		J4	P94/IRQ13*	PM_S4_STATE_L	IN 24D3 33B7 65A6 65C4
		H2	P95/IRQ14*	PM_SLP_S5_L	IN 24D3 45C3
		H1	P96/EXCL	SMC_SUS_CLK	IN 45A7
		G2	P97/IRQ15*/SDA0	(OC) SMB_0_S0_DATA	BI 47D6

OMIT
U4900
SMC_H8S2116
BGA
(2 OF 4)

(DEBUG_SW_1) 45C5	SMC_PA0	R3	PA0/KIN8*/PA2DC		
(DEBUG_SW_2) 45C5	SMC_PA1	P3	PA1/KIN9*/PA2DD		
27C5 24D5 OUT	PM_SYSRST_L (OC)	R2	PA2/KIN10*/PS2AC		
41A5 OUT	USB_DEBUGPRT_EN_L (OC)	N3	PA3/KIN11*/PS2AD		
15B7 88B2 BI	PM_EXTTS_L<0> (OC)	R1	PA4/KIN12*/PS2BC		
15B7 88B2 BI	PM_EXTTS_L<1> (OC)	N2	PA5/KIN13*/PS2BD		
57C8 45D5 6C1 BI	SYS_ONEWIRE (OC)	M4	PA6/KIN14*/PS2CC		
24C3 24A5 OUT	PM_BATLOW_L (OC)	N1	PA7/KIN15*/PS2CD		
(DEBUG_SW_3) 45C5	SMC_PB0	B10	PB0/LSMI*		
24C8 OUT	SMC_RUNTIME_SCI_L	A10	PB1/LSCI		
39B2 IN	SMC_ODD_DETECT	D10	PB2		
48A8 OUT	ISENSE_CAL_EN	A11	PB3		
45C3 IN	SMC_EXCARD_CP	B11	PB4		
44B4 OUT	SMC_EXCARD_PWR_EN	C11	PB5		
45D5 IN	SMC_EXCARD_OC_L	A12	PB6		
45D5 IN	SMC_GFX_OVERTEMP_L	D11	PB7		
44B4 OUT	SMC_FAN_0_CTL	G14	PC0/TIOCA0/WUE8*		
50B4 6D2 OUT	SMC_FAN_1_CTL	G15	PC1/TIOCB0/WUE9*		
44B4 OUT	SMC_FAN_2_CTL	G13	PC2/TIOCC0/TCLKA/WUE10*		
44B4 OUT	SMC_FAN_3_CTL	G12	PC3/TIOCD0/TCLKB/WUE11*		
44B4 IN	SMC_FAN_0_TACH	H14	PC4/TIOCA1/WUE12*		
50C4 6D2 IN	SMC_FAN_1_TACH	H15	PC5/TIOCB1/TCLKC/WUE13*		
44B4 IN	SMC_FAN_2_TACH	H13	PC6/TIOCA2/WUE14*		
44A4 6A7 IN	SMC_FAN_3_TACH	H12	PC7/TIOCB2/TCLKD/WUE15*		
51C2 IN	SMS_X_AXIS	M11	PD0/AN8		
51C2 IN	SMS_Y_AXIS	P11	PD1/AN9		
51C2 IN	SMS_Z_AXIS	R11	PD2/AN10		
45C6 IN	SMC_ANALOG_ID	N11	PD3/AN11		
61C5 IN	SMC_NB_CORE_ISENSE	P10	PD4/AN12		
62C2 IN	SMC_NB_1V8_ISENSE	R10	PD5/AN13		
44A4 IN	ALS_LEFT	N10	PD6/AN14		
44A4 IN	ALS_RIGHT	M10	PD7/AN15		
		M7	PE0	SMC_CASE_OPEN	IN 45B3
		M2	PE1*/ETCK	SMC_TCK	IN 6C2 45C5 46B4
		M1	PE2*/ETDI	SMC_TDI	IN 6C2 45C5 46B4
		L4	PE3*/ETDO	SMC_TDO	OUT 6C2 45C5 46B6
		L2	PE4*/ETMS	SMC_TMS	IN 6C2 45C5 46B6
		M7	PF0/IRQ8*/PWM2	SMC_PF0	44A4
		P6	PF1/IRQ9*/PWM3	SMC_PF1	44B4
		R6	PF2/IRQ10*/TMOY	SMC_LID	IN 6B2 42C3 45C5 57A8
		N6	PF3/IRQ11*/TMOX	SMC_PF3	45C1
		M6	PF4/PWM4	SMC_BATT_ISET	OUT 6C1 66A8
		R5	PF5/PWM5	SMC_BATT_VSET	OUT 44A4
		P5	PF6/PWM6	SMC_SYS_ISET	OUT 66B8
		N5	PF7/PWM7	SMC_SYS_VSET	OUT 44A4
		P9	PG0/EXIRQ8*/TMIX	SMC_PG0	45C5
		R9	PG1/EXIRQ9*/TMIY	SMC_SMS_INT	IN 51A8
		N9	PG2/EXIRQ10*/SDA2	(OC) SMB_BSA_DATA	BI 47C3
		P8	PG3/EXIRQ11*/SCL2	(OC) SMB_BSA_CLK	BI 47C3
		R8	PG4/EXIRQ12*/EXSDAA	(OC) SMB_A_S3_DATA	BI 47D3
		M8	PG5/EXIRQ13*/EXSCLA	(OC) SMB_A_S3_CLK	BI 47D3
		P7	PG6/EXIRQ14*/EXSDAB	(OC) SMB_B_S0_DATA	BI 47C6
		R7	PG7/EXIRQ15*/EXSCLB	(OC) SMB_B_S0_CLK	BI 47C6
		E1	PH0/EXIRQ6*	SMC_PROCHOT	OUT 45B6
		F3	PH1/EXIRQ7*	SMC_THRMTRIP	OUT 45B5
		K2	PH2/FWE	SMC_FWE	IN 45C5
		C4	PH3/EXEXCL	ALS_GAIN	OUT 44B4
		D4	PH4	SMC_PH4	44A4
		B3	PH5	SMS_ONOFF_L	OUT 51C7

NOTE: SMS Interrupt can be active high or low, rename net accordingly. If SMS interrupt is not used, pull up to SMC rail.

45C6 PP3V3_S5_AVREF_SMC
51B8 45D8 45D4 45C1 7C1 =PP3V42_G3H_SMC

C4902 22UF 20% 6.3V CERM 805
C4903 0.1UF 20% 10V CERM 402
C4904 0.1UF 20% 10V CERM 402
C4905 0.1UF 20% 10V CERM 402
C4906 0.1UF 20% 10V CERM 402
R4999 4.7 5% 1/16W MF-LF 402
PP3V3_S5_SMC_AVCC MIN_LINE_WIDTH=0.25 MM MIN_NECK_WIDTH=0.20 MM VOLTAGE=3.3V
C4920 0.1UF 20% 10V CERM 402

PLACEMENT_NOTE=Place C4907 close to U4900 pin F1
PLACEMENT_NOTE=Place R4999 close to U4900 pins N14,N15
PLACEMENT_NOTE=Place C4920 close to U4900 pins N14,N15

SMC_VCL
C4907 0.47UF 10% 6.3V CERM-X5R 402

OMIT
U4900
SMC_H8S2116
BGA
(3 OF 4)

46B4 45D7 6C2 IN	SMC_RESET_L	E3	RES*
45C7	SMC_XTAL	A2	XTAL
45C7	SMC_EXTAL	B2	EXTAL
	SMC_MD1	E2	MD1
	SMC_KBC_MDE	K1	MD2
	SMC_NMI	F4	NMI
	SMC_TRST_L	L1	ETRST*
		P12	AVSS
		R12	VSS

R4909 10K 5% 1/16W MF-LF 402
R4901 10K 5% 1/16W MF-LF 402
R4902 10K 5% 1/16W MF-LF 402
R4998 10K 5% 1/16W MF-LF 402
R4903 0 5% 1/16W MF-LF 402 NO STUFF
XW4900 SM
GND_SMC_AVSS 45B6 48A1 48B1 48C1 48C6 60B2 61C5 62C2 66B1 66C2

44D8	SMC_P14	NC_SMC_P14
44C8	SMC_P20	NC_SMC_P20
44C8	SMC_P21	NC_SMC_P21
44C8	SMC_P22	NC_SMC_P22
44C8	SMC_P23	NC_SMC_P23
44C8	SMC_P26	NC_SMC_P26
44C8	SMC_P27	NC_SMC_P27
44B8	SMC_P46	NC_SMC_P46
44C8	SMC_P44	NC_SMC_P44
44C8	SMC_P43	NC_SMC_P43
44D5	SMC_P62	NC_SMC_P62
44D5	SMC_P63	NC_SMC_P63
44D5	SMC_P64	NC_SMC_P64
44C5	SMC_P81	NC_SMC_P81
44B5	SMC_PF1	NC_SMC_PF1
44B8	SMC_SYS_KBDLED	NC_SMC_SYS_KBDLED
44A5	ALS_GAIN	NC_ALS_GAIN
44B8	SMC_EXCARD_PWR_EN	NC_SMC_EXCARD_PWR_EN
44A8	SMC_FAN_0_CTL	NC_SMC_FAN_0_CTL
44A8	SMC_FAN_2_CTL	NC_SMC_FAN_2_CTL
44A8	SMC_FAN_3_CTL	NC_SMC_FAN_3_CTL
44A8	SMC_FAN_0_TACH	NC_SMC_FAN_0_TACH
44A8	SMC_FAN_2_TACH	NC_SMC_FAN_2_TACH
44A8 6A7	SMC_FAN_3_TACH	NC_SMC_FAN_3_TACH
44A8	ALS_LEFT	NC_ALS_LEFT
44A8	ALS_RIGHT	NC_ALS_RIGHT
44B5	SMC_PF0	NC_SMC_PF0
44B5	SMC_BATT_VSET	NC_SMC_BATT_VSET
44B5	SMC_SYS_VSET	NC_SMC_SYS_VSET
44D8	SMC_RSTGATE_L	NC_SMC_RSTGATE_L
44C8	SMC_GFX_THROTTLE_L	NC_SMC_GFX_THROTTLE_L
44C5	SMC_GPU_ISENSE	SMC_GPU1_ISENSE 60B2 60C7
44C5	SMC_GPU_VSENSE	SMC_GPU1_VSENSE 48B1
44C8	SMC_P45	SMC_ENRGYSTR_LDO_EN 66D3
44A5	SMC_PH4	SMC_ENRGYSTR_LDO_PGOOD 45C5 66C1

MAKE_BASE=TRUE

OMIT
U4900
SMC_H8S2116
BGA
(4 OF 4)

NC	G3	NC0	
NC	H3	NC1	
NC	K3	NC2	
NC	L3	NC3	
NC	N4	NC4	
NC	M5	NC5	
NC	N7	NC6	
NC	M12	NC7	
NC	M13	NC8	
NC	L12	NC9	
NC	K15	NC10	
NC	J14	NC11	
NC12	F15	NC	
NC13	A14	NC	
NC14	C12	NC	
NC15	C10	NC	
NC16	C5	NC	
NC17	A3	NC	
NC18	B8	NC	
NC19	E4	NC	
NC20	H4	NC	
NC21	M9	NC	
NC22	N8	NC	

SMC
SYNC_MASTER=T9_MLB
SYNC_DATE=10/30/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

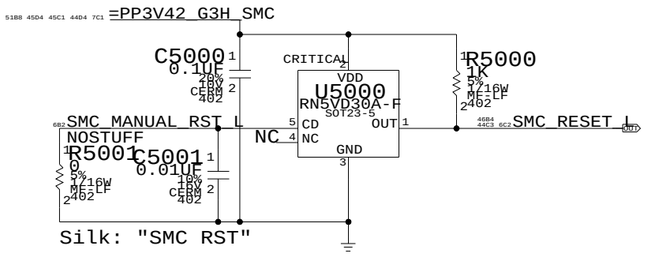
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

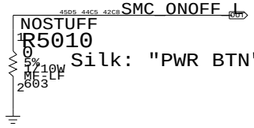
SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 49 OF 106	

WWW.AliSaler.Com

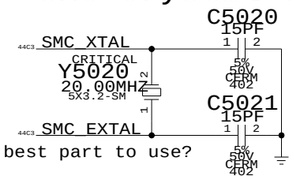
SMC Reset Button / Brownout Detect



Debug Power Button

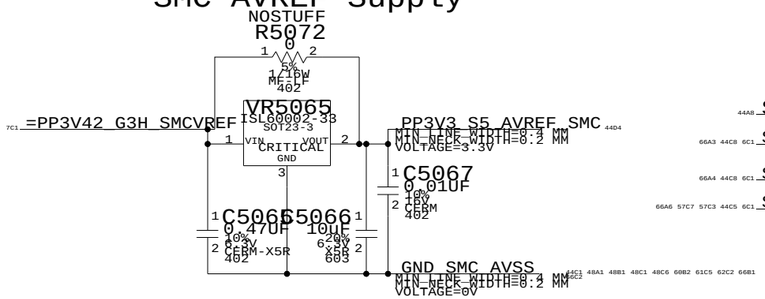


SMC Crystal Circuit



Is this the best part to use?

SMC AVREF Supply



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
353S1278	353S1381	?	VR5065	TI REF3133

THESE NEED TO BE PULLED TO THE PROPER RAIL:

SMS_INT_L
SMC_TPM_RESET_L

=PP3V3_S0_SMC_LS
SMS_INT_L
SMC_GFX_OVERTEMP_L — R5030 10K

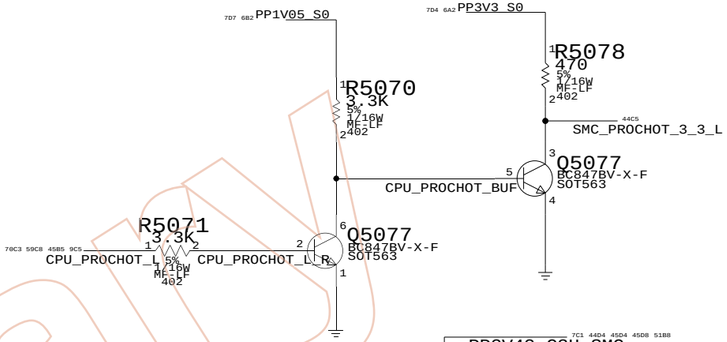
=PP3V42_G3H_SMC

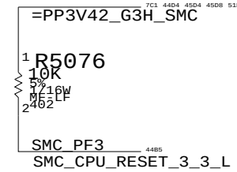
RSMRST_PWRGD	R5094	100K
SMC_ONOFF_L	R5053	10K
SMC_EXCARD_OC_L	R5028	10K
SMC_TX_L	R5080	10K
SMC_RX_L	R5081	100K
SYS_ONEWIRE	R5082	2.0K
SMC_BS_ALRT_L	R5083	470K
SMC_TMS	R5084	10K
SMC_TDO	R5085	10K
SMC_TDI	R5086	10K
SMC_TCK	R5087	10K
SMC_FWE	R5048	10K
SMC_LID	R5073	100K
SMC_ENRGYSTR_LDO_PGOOD	R5095	10K
PM_LAN_PWRGD	R5091	10K
SMC_PA0	R5098	10K
SMC_PA1	R5099	10K
SMC_PB0	R5090	10K
SMC_P67	R5089	10K
SMC_PG0	R5079	10K

SMC_ANALOG_ID	R5049	10K
SMC_BATT_TRICKLE_EN	R5054	10K
SMC_BATT_CHG_EN	R5055	10K
SMC_BC_ACOK	R5088	470K

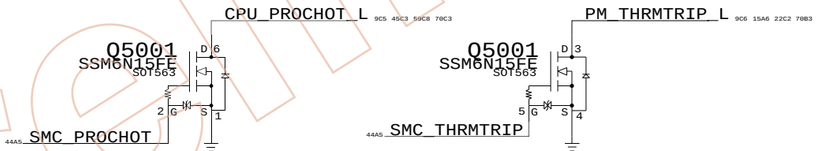
R5006	100K	PM_SLP_S5_L
R5024	10K	SMC_EXCARD_CP
R5047	10K	SMC_CASE_OPEN
R5096	10K	SMC_ADAPTER_EN
R5097	10K	SMC_NB_1V25_ISENSE

SMC 1.05V to 3.3V Level Shifting



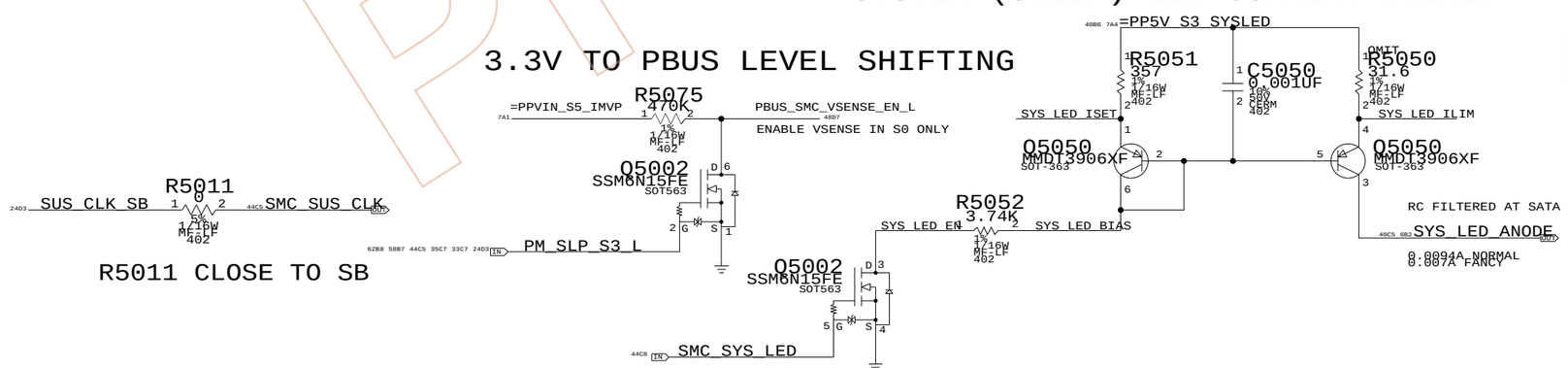


SMC 3.3V to 1.05V Level Shifting



SYSTEM (SLEEP) LED CURRENT DRIVER

3.3V TO PBUS LEVEL SHIFTING



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
114S0071	1	31.6, 1%, 1/16W, MF-LF, 402	R5050	NORMAL
114S0086	1	44.2, 1%, 1/16W, MF-LF, 402	R5050	FANCY

SMC SUPPORT

SYNC_MASTER=GPU SYNC_DATE=07/17/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

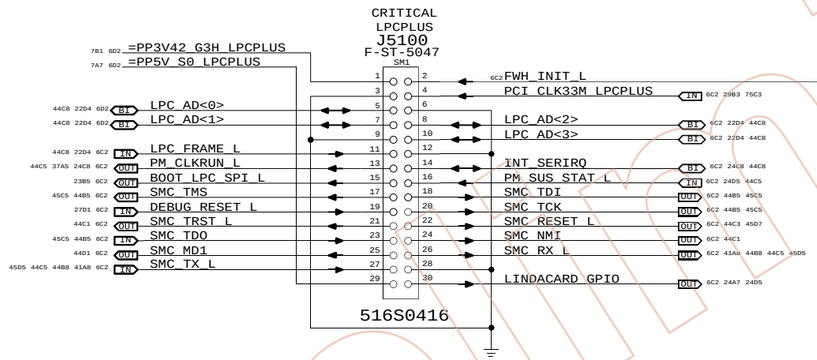
SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE — SHT 50 OF 106

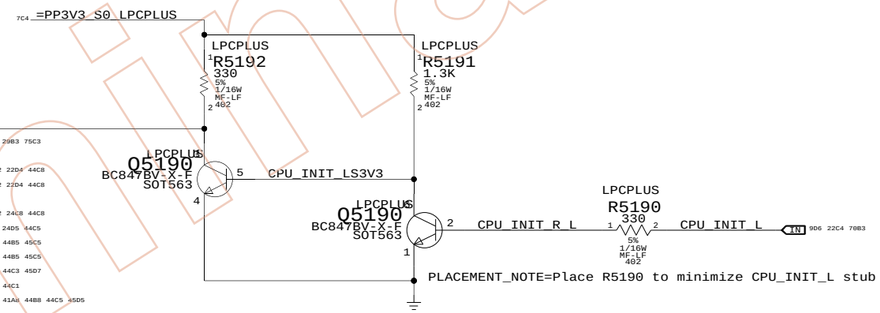
Preliminary

WWW.AliSaler.Com

LPC+ Connector


CRITICAL
LPCPLUS
J5100
F-ST-5047
SM1
7B1 6D2 =PP3V42_G3H_LPCPLUS
7A7 6D2 =PP5V_S0_LPCPLUS
44C8 22D4 6D2 BI LPC_AD<0>
44C8 22D4 6D2 BI LPC_AD<1>
44C8 22D4 6C2 IN LPC_FRAME_L
44C5 37A5 24C8 6C2 OUT PM_CLKRUN_L
23B5 6C2 OUT BOOT_LPC_SPI_L
45C5 44B5 6C2 OUT SMC_TMS
27D1 6C2 IN DEBUG_RESET_L
44C1 6C2 OUT SMC_TRST_L
45C5 44B5 6C2 IN SMC_TDO
44D1 6C2 OUT SMC_MD1
45D5 44C5 44B8 41A8 6C2 IN SMC_TX_L
6C2 FWH_INIT_L
PCI_CLK33M_LPCPLUS IN 6C2 29B3 75C3
LPC_AD<2> BI 6C2 22D4 44C8
LPC_AD<3> BI 6C2 22D4 44C8
INT_SERIRQ BI 6C2 24C8 44C8
PM_SUS_STAT_L IN 6C2 24D5 44C5
SMC_TDI OUT 6C2 44B5 45C5
SMC_TCK OUT 6C2 44B5 45C5
SMC_RESET_L OUT 6C2 44C3 45D7
SMC_NMI OUT 6C2 44C1
SMC_RX_L OUT 6C2 41A8 44B8 44C5 45D5
LINDACARD_GPIO OUT 6C2 24A7 24D5
516S0416

FWH_INIT_L Generation



Preliminary

LPC+ Debug Connector

SYNC_MASTER=WFERRY SYNC_DATE=06/01/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

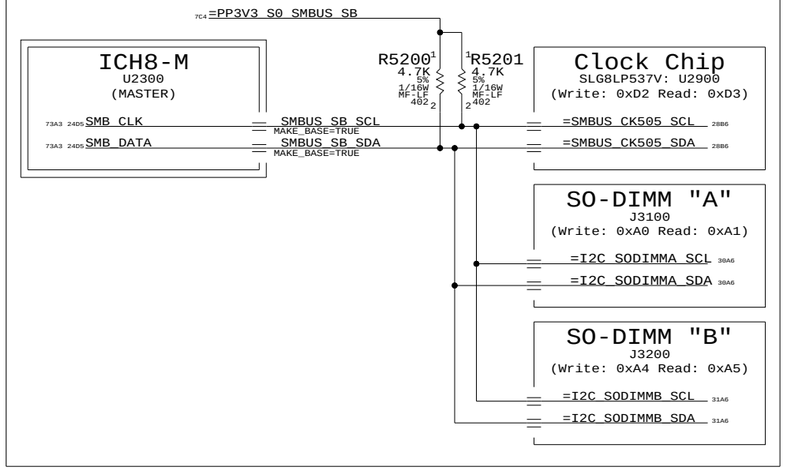
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

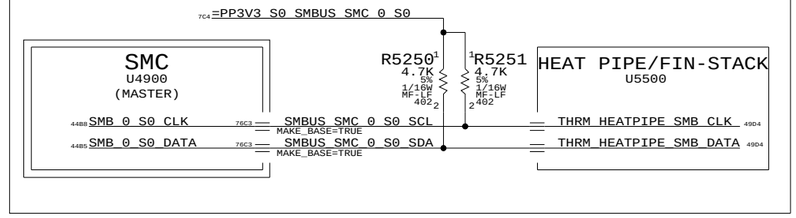
SCALE	SHT	OF
NONE	51	106

WWW.AliSaler.Com

ICH8-M SMBus Connections

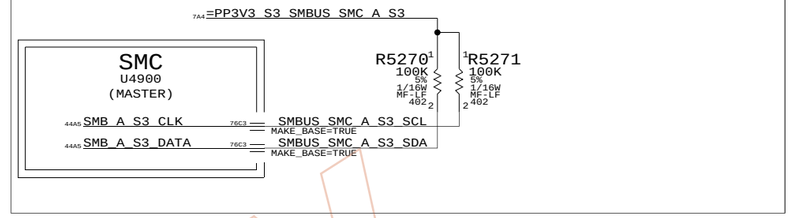


SMC "0" SMBus Connections

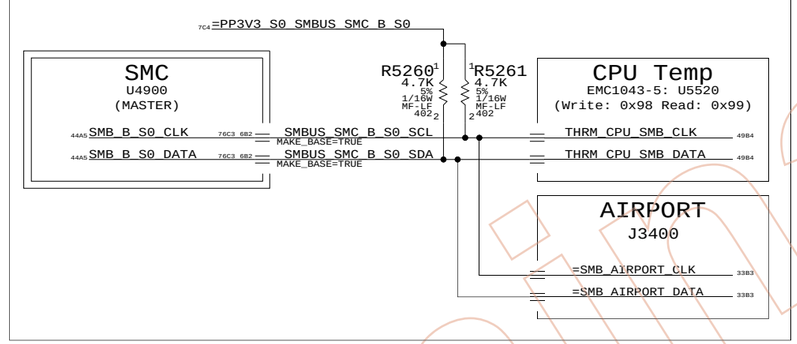


SMC "A" SMBus Connections

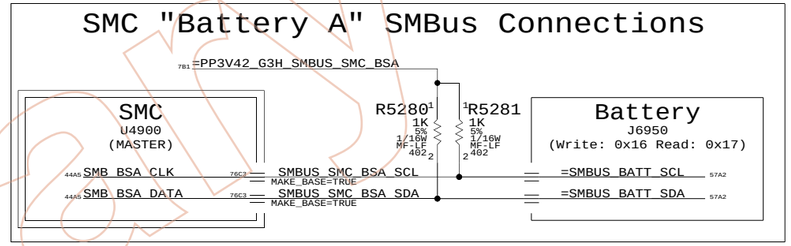
NOTE: SMC RMT bus remains powered and may be active in S3 state



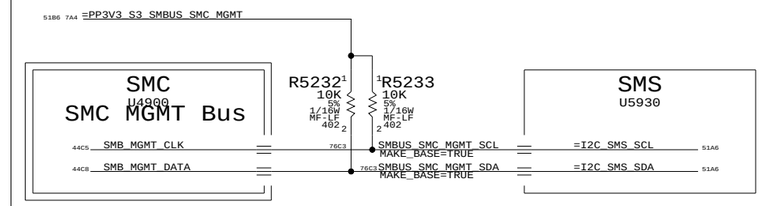
SMC "B" SMBus Connections



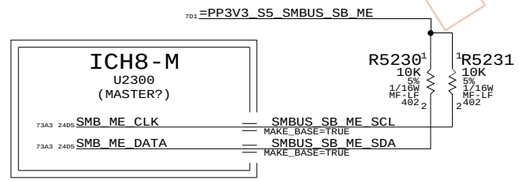
SMC "Battery A" SMBus Connections



SMC "MANAGEMENT" SMBUS CONNECTIONS



ICH8-M ME SMBus Connections



SMBUS CONNECTIONS

SYNC_MASTER=WFERRY SYNC_DATE=06/01/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

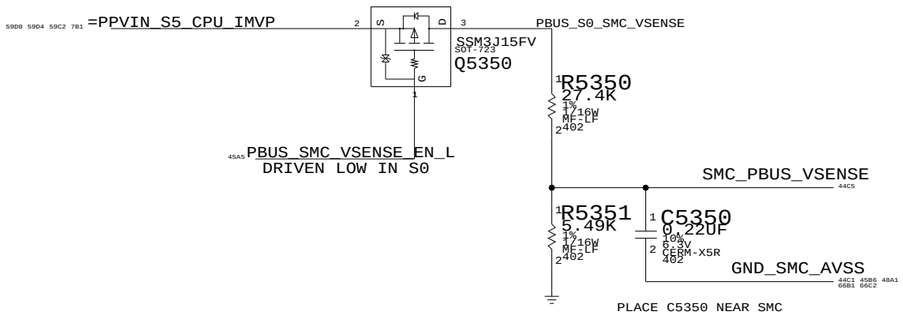
SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE SHT 52 OF 106

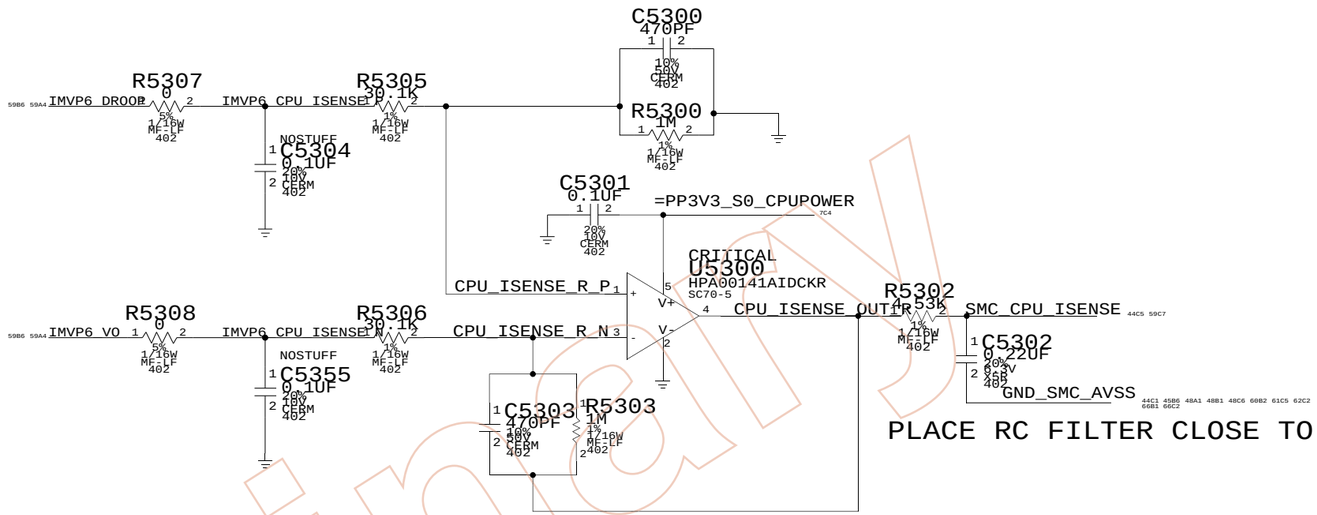
Preliminary

WWW.AliSaler.Com

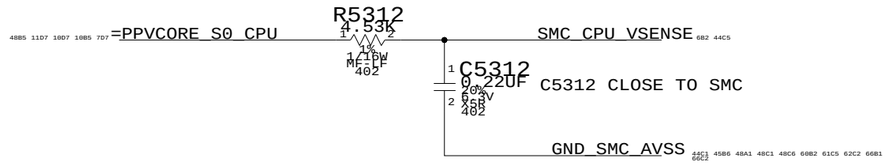
PROCESSOR DCIN VOLTAGE SENSE



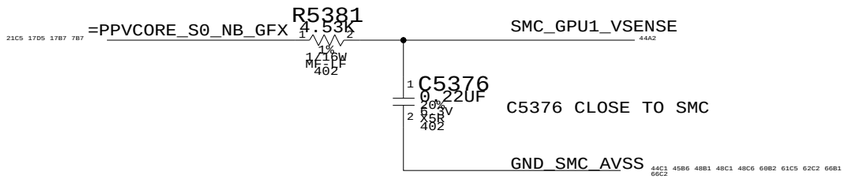
CPU CURRENT SENSE



CPU VOLTAGE SENSE

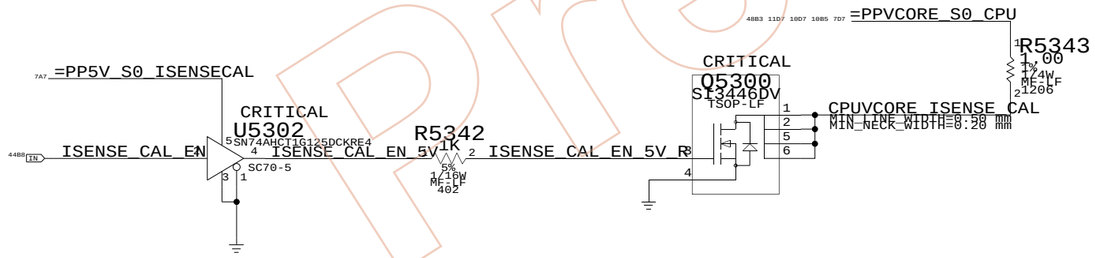


GPU VOLTAGE SENSE



Current Sense Calibration Circuit

Switches in fixed load on power supplies to calibrate current sense circuits



Preliminary

CPU Current & Voltage Sense

SYNC_MASTER=GPU SYNC_DATE=07/17/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	53	106

WWW.AliSaler.Com

HEAT-PIPE/FIN-STACK TEMPERATURE ZONE

CRITICAL
J5550
78171-0004
M-RT-SM
518S0521

CONNECTOR DRIVES TWO TEMP DIODE JUNCTIONS

1. ROUTE DXP AND DXN DIFFERENTIALLY
2. ROUTE GROUNDED GAURD TRACES AROUND THE DXP/DXN DIFF PAIR
3. 10 MIL TRACE WIDTHS AND 10MIL SPACING BETWEEN THE GAURD

6A1 THRM_HEATPIPE_P
PLACE C5510 NEXT TO U5500
C5510 0.0022UF 10% 50V CERM 402
6A1 THRM_HEATPIPE_N

1. ROUTE DXP AND DXN DIFFERENTIALLY
2. ROUTE GROUNDED GAURD TRACES AROUND THE DXP/DXN DIFF PAIR
3. 10 MIL TRACE WIDTHS AND 10MIL SPACING BETWEEN THE GAURD

6A1 THRM_FINSTACK_P
C5511 0.0022UF 10% 50V CERM 402 PLACE C5511 NEXT TO U5500
6A1 THRM_FINSTACK_N

CRITICAL
PP3V3_S0_THRM_HEATPIPE_F
PLACE C5501 NEXT TO U5500 VDD
C5501 0.1UF 10% 16V X5R 402
C5502 1UF 10% 6.3V CERM 402
R5501 33 5% 1/16W MF-LF 402
=PP3V3_S0_THRM_SNR 7C4 49C2
PLACE C5501 NEAR U5500 VDD

U5500
EMC1043-5
MSOP
VDD 6
DP1 1
DN1 2
DP2 3
DN2 4
GND 5
SMCLK 8 — 47D3 THRM_HEATPIPE_SMB_CLK — IO
SMDATA 7 — 47D3 THRM_HEATPIPE_SMB_DATA — IO
ADDR= 1001 100B

(WRITE: 0X98 READ: 0X99)

LAYOUT NOTE:
ADD GND GUARD TRACE FOR CPU_THERMD_P AND CPU_THERMD_N

LAYOUT NOTE:
ROUTE CPU_THERMD_P AND CPU_THERMD_N ON SAME LAYER.
10 MIL TRACE
10 MIL SPACING

CPU TEMPERATURE ZONE

OUT 9C6 CPU_THERMD_P
C5520 0.0022UF 10% 50V CERM 402
(TO CPU INTERNAL THERMAL DIODE)
IN 9C6 CPU_THERMD_N

1. ROUTE DXP AND DXN DIFFERENTIALLY
2. ROUTE GROUNDED GAURD TRACES AROUND THE DXP/DXN DIFF PAIR
3. 10 MIL TRACE WIDTHS AND 10MIL SPACING BETWEEN THE GAURD

6A1 THRM_DIMM_DX_F_P
R5522 10 1% 1/16W MF-LF 402
THRM_DIMM_DX_P
THRM_DIMM_DX_N
C5521 0.0022UF 10% 50V CERM 402

CRITICAL
Q5520
BC846BM3T5G
SOT732-3
PLACE UNDER J3101

NOSTUFF
C5524 0.0022UF 10% 50V CERM 402 PLACE C5524 NEXT TO Q5520

6A1 THRM_DIMM_DX_F_N
R5523 10 1% 1/16W MF-LF 402

1. ROUTE DXP AND DXN DIFFERENTIALLY
2. ROUTE GROUNDED GAURD TRACES AROUND THE DXP/DXN DIFF PAIR
3. 10 MIL TRACE WIDTHS AND 10MIL SPACING BETWEEN THE GAURD

CRITICAL
PP3V3_S0_THRM_CPU_F
C5522 0.1UF 10% 16V X5R 402
C5523 1UF 10% 6.3V CERM 402
R5524 33 5% 1/16W MF-LF 402
=PP3V3_S0_THRM_SNR 7C4 49D2
PLACE C5522 NEAR U5520 VDD

U5520
EMC1043-5
MSOP
VDD 6
DP1 1
DN1 2
DP2 3
DN2 4
GND 5
SMCLK 8 — 47C3 THRM_CPU_SMB_CLK — IO
SMDATA 7 — 47C3 THRM_CPU_SMB_DATA — IO
ADDR= 1001 100B

(Write: 0x98 Read: 0x99)

Preliminary

TEMPERATURE SENSE

SYNC_MASTER=GPU SYNC_DATE=06/21/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

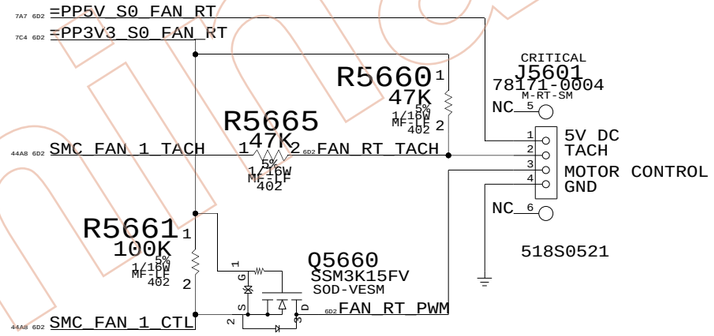
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE SHT 55 OF 106

WWW.AliSaler.Com



Fan

SYNC_MASTER=ENES SYNC_DATE=11/10/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE NONE

SHT 56 OF 106

Preliminary

WWW.AliSaler.Com

PAGE NOTES

INPUT

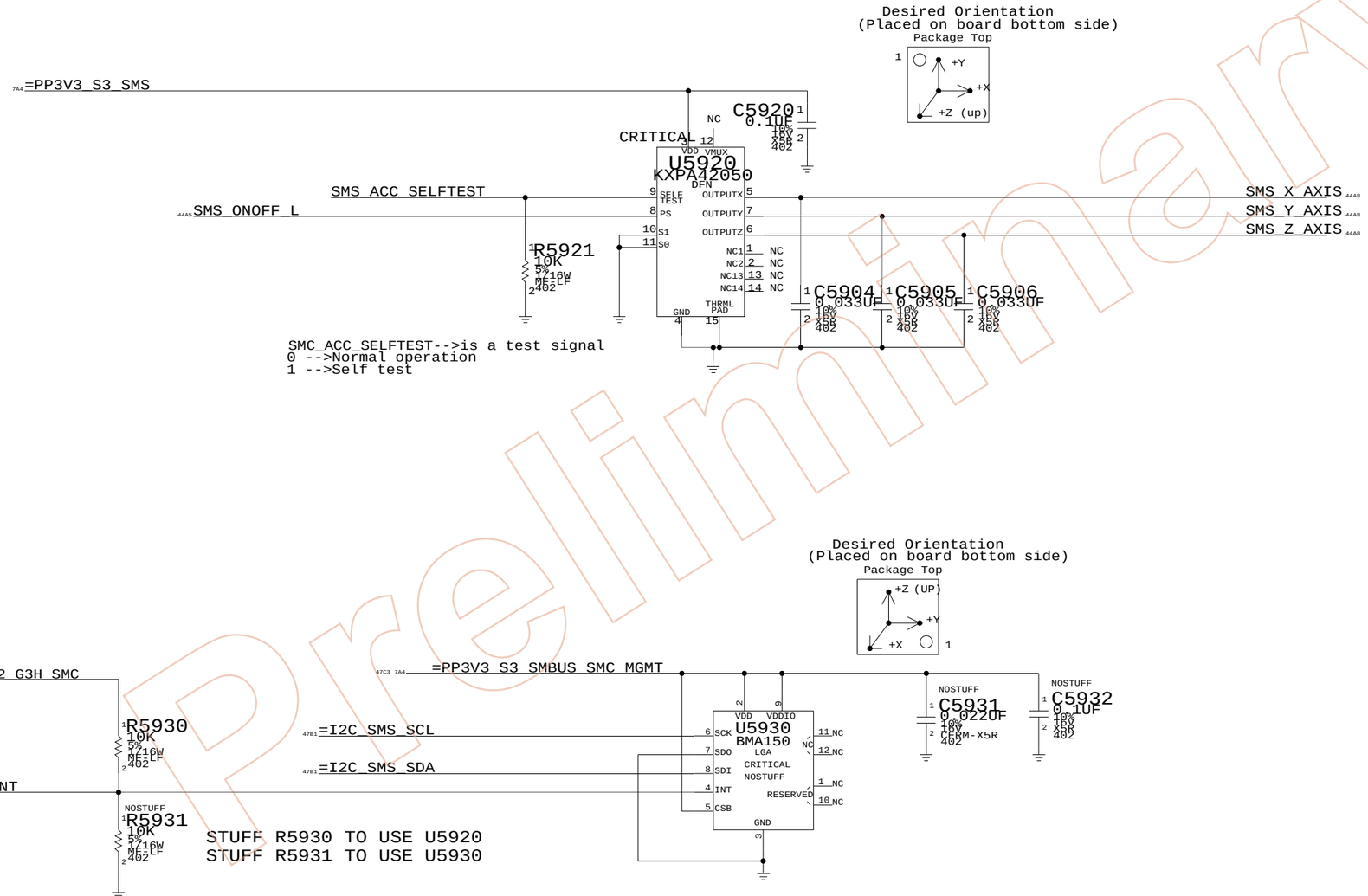
=PP3V3_S3_SMS - 3.3V POWER FOR SMS (STAYS ALIVE IN SLEEP)
SMS_ONOFF_L - CONNECT TO SMC TO BE ABLE TO PUT SMS INTO LOW-POWER MODE

OUTPUT

SMS_ACC_*_AXIS - ACCELEROMETER OUTPUT TO SCU

PAGE HISTORY

5/19/2005 - FIRST REVISION OF PAGE
7/26/2005 - REMOVED BOM TABLE AND UPDATED SYMBOL TO KXM52-2050
7/26/2005 - CONNECTED PD PIN TO SMC'S SMS_ONOFF_L
7/26/2005 -



SMS

SYNC_MASTER=SMC SYNC_DATE=08/23/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

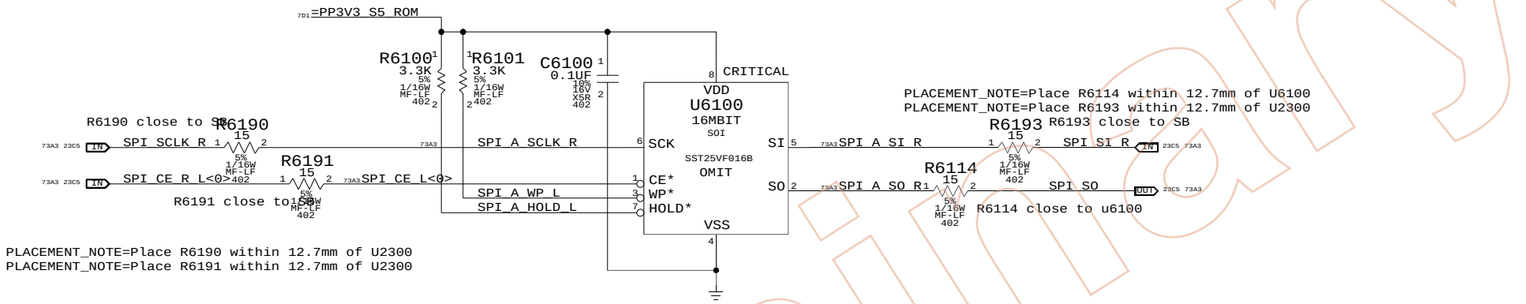
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	59	106

Preliminary

WWW.AliSaler.Com



Preliminary

SPI ROMs

SYNC_MASTER=WFERRY SYNC_DATE=04/26/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

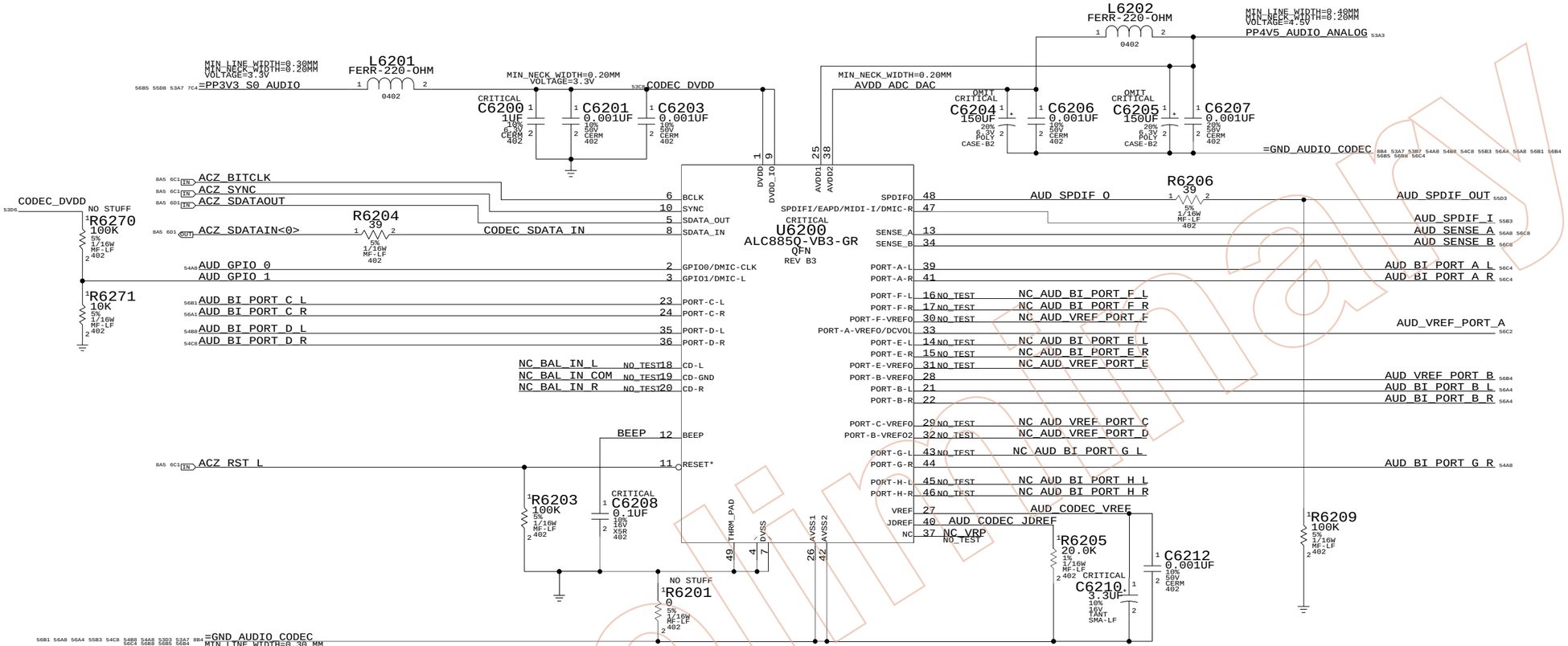
SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	61	106

WWW.AliSaler.Com

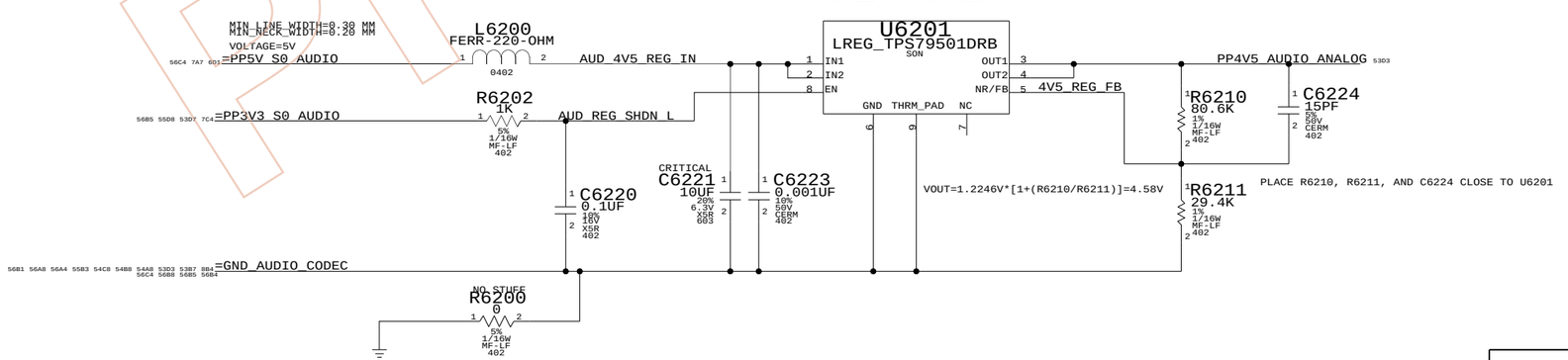
AUDIO CODEC

APPLE P/N 353S1538



AUDIO 4.5V REGULATOR

APPLE P/N 353S1576



AUDIO: CODEC

SYNC_MASTER=M70AUDIO

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

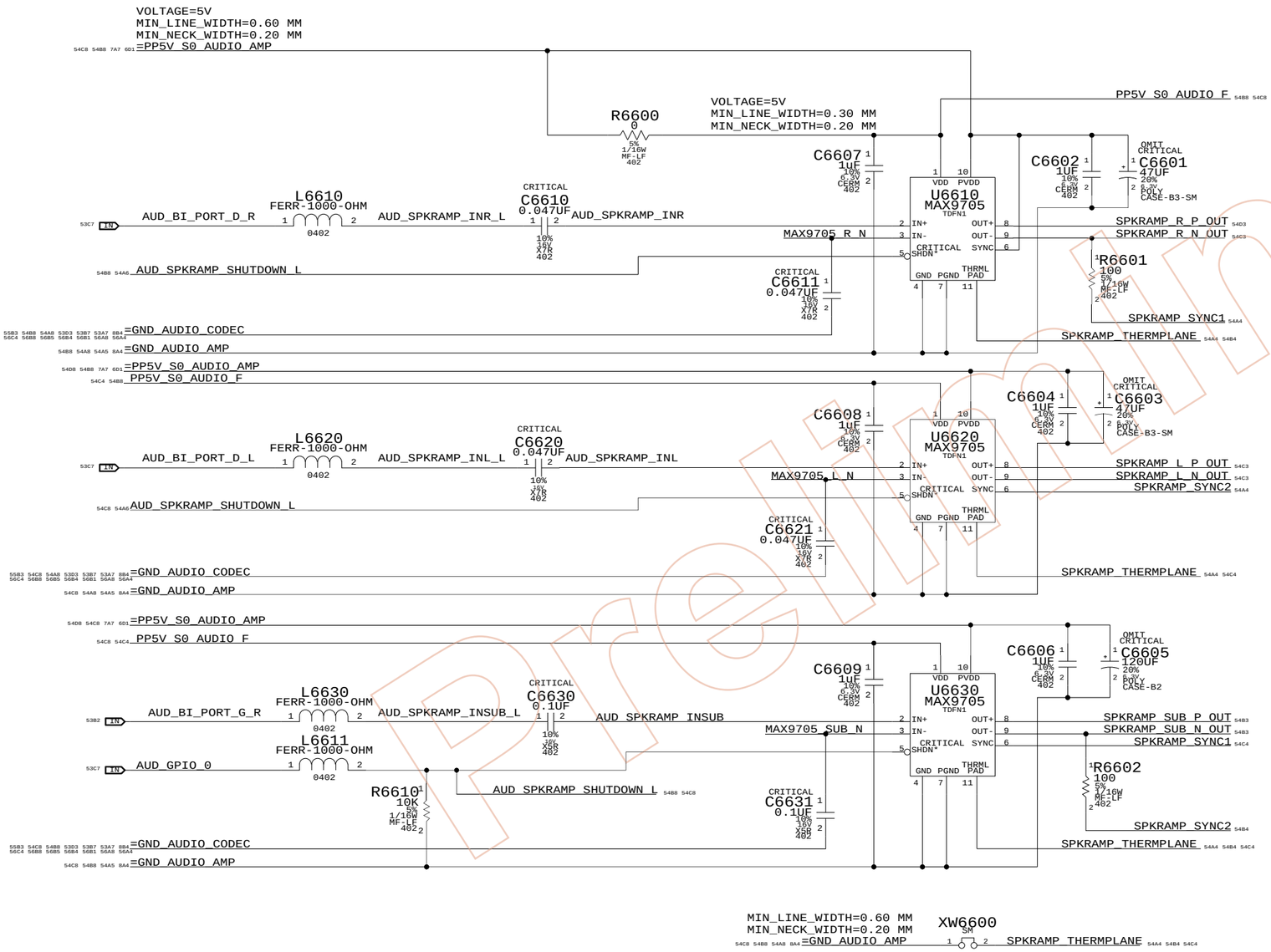
SCALE	SHT	OF
NONE	62	106

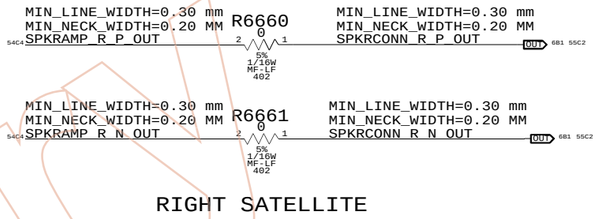
Preliminary

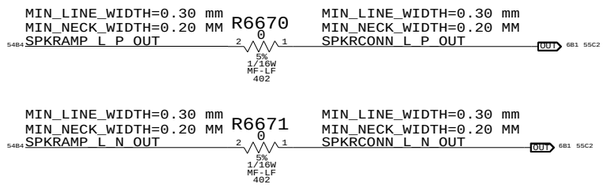
WWW.AliSaler.Com

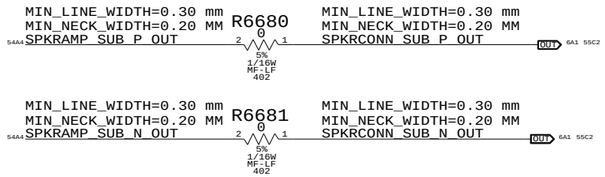
SATELLITE & SUB TWEETER AMPLIFIER APN:353S1595

SATELLITE	169 HZ < FC < 282 HZ
SUB	80 HZ < FC < 132 HZ
GAIN	12DB









AUDIO: SPEAKER AMP

SYNC_MASTER=M70AUDIO SYNC_DATE=03/12/2007

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

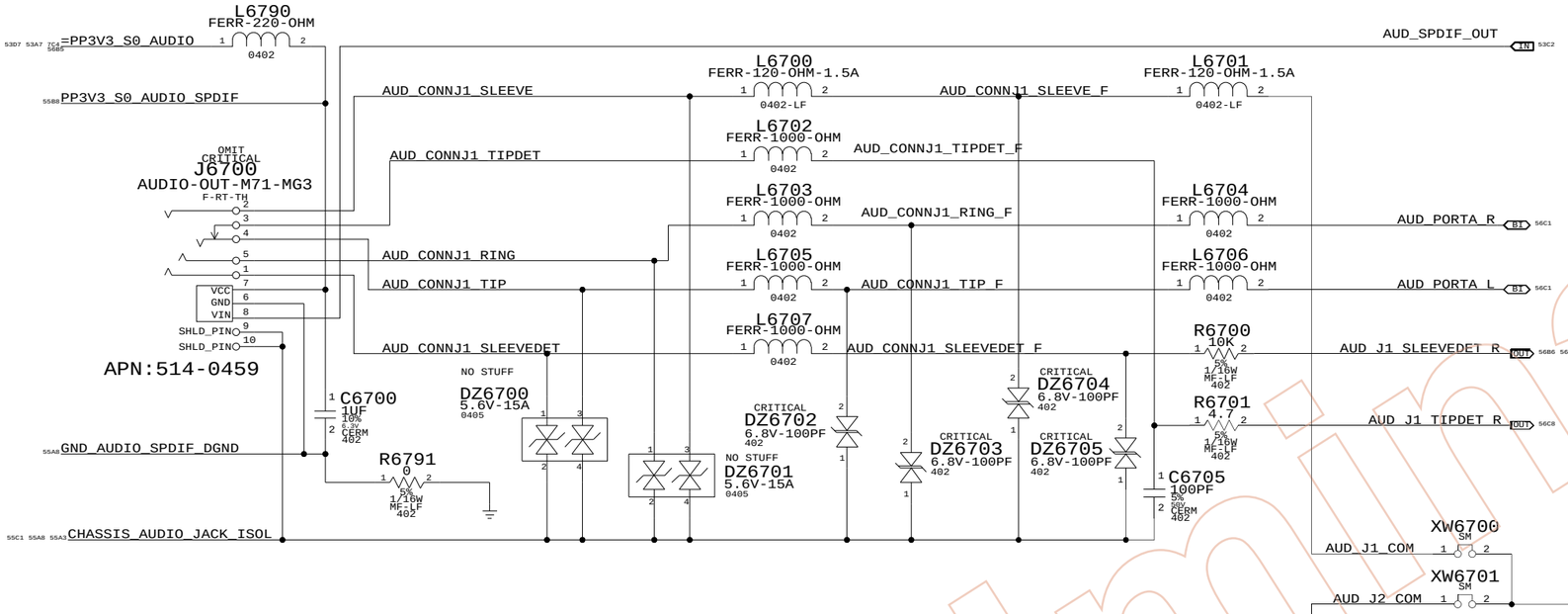
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 66 OF 106	

Preliminary

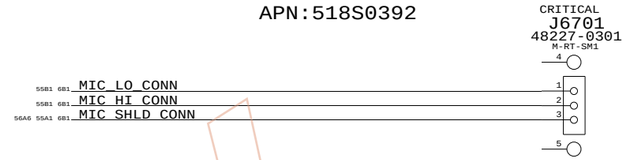
WWW.AliSaler.Com

AUDIO JACK 1: LO/HP CONNECTOR, SPDIF TX



MIC CONNECTOR

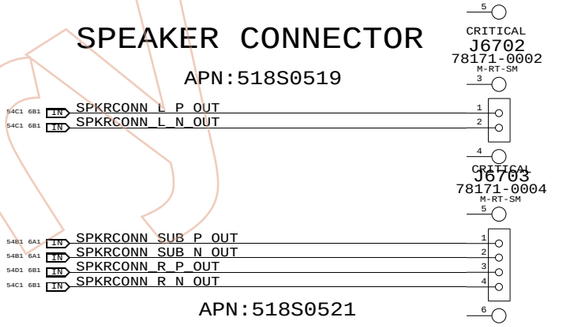
APN:518S0392



SPEAKER CONNECTOR

APN:518S0519

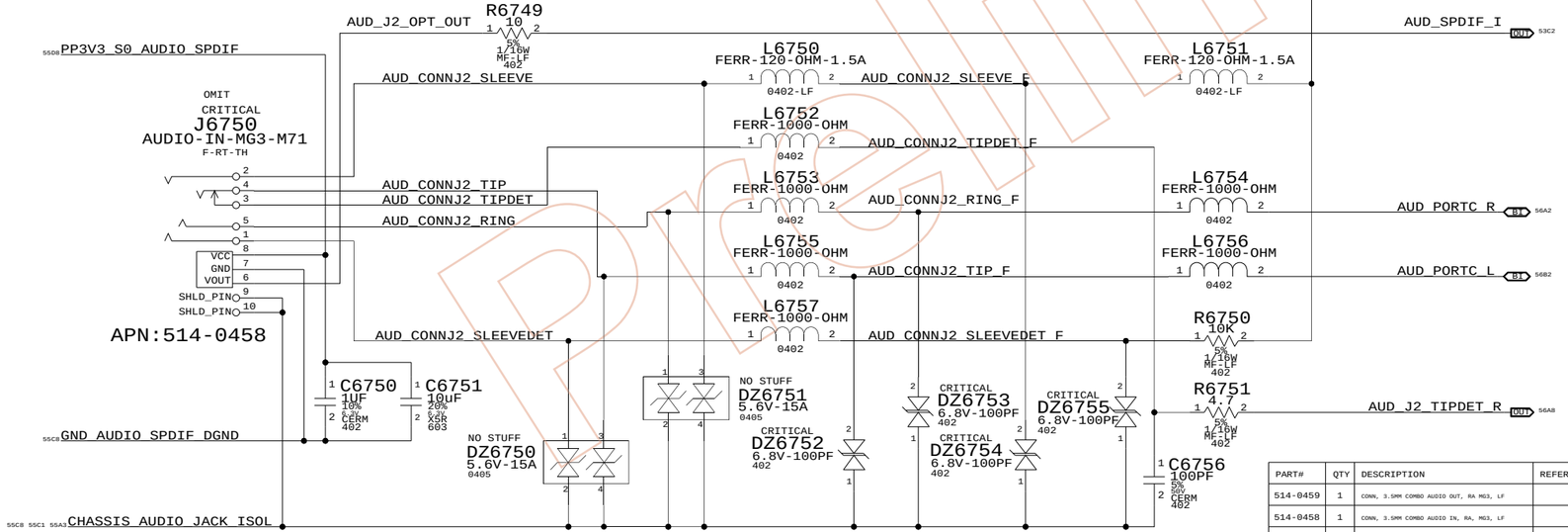
APN:518S0521



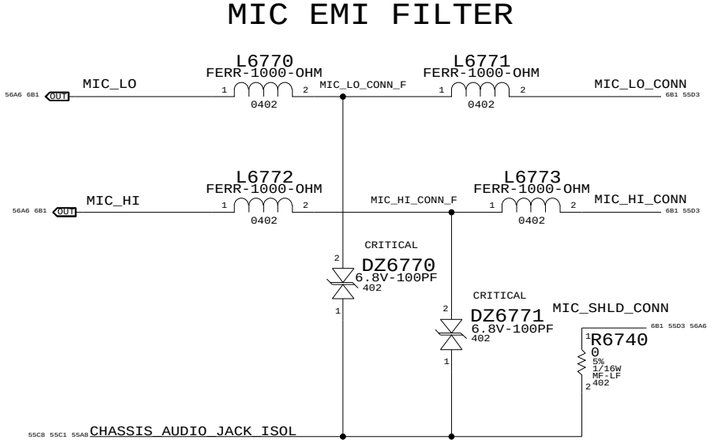
XW6705

=GND_CHASSIS_AUDIO_JACK 1 SM 2 CHASSIS_AUDIO_JACK_ISOL

AUDIO JACK 2: LINE IN CONNECTOR, SPDIF RX



MIC EMI FILTER



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0459	1	CONN, 3.5MM COMBO AUDIO OUT, RA MG3, LF	J6700	CRITICAL	NORMAL
514-0458	1	CONN, 3.5MM COMBO AUDIO IN, RA, MG3, LF	J6750	CRITICAL	NORMAL
514-0479	1	CONN, 3.5MM COMBO AUDIO OUT, RA, BLACK, LF	J6700	CRITICAL	FANCY
514-0478	1	CONN, 3.5MM COMBO AUDIO IN, RA, BLACK, LF	J6750	CRITICAL	FANCY

AUDIO: JACK

SYNC_MASTER=M70AUDIO SYNC_DATE=03/12/2007

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 67 OF 106	

Preliminary

WWW.AliSaler.Com

CODEC OUTPUT SIGNAL PATHS

FUNCTION	VOLUME	CONVERTER	PIN COMPLEX	MUTE CONTROL	DET ASSIGNMENT
HP OUT	0X0F (15)	0X05 (5)	0X15 (21,PORTA)	VREF_A(100%)	0X15 (21,PORTA)
SAT SPKR	0X26 (38)	0X25 (37)	0X14 (20,PORTD)	GPIO 0	N/A
SUB SPKR	0X0E (14)	0X04 (4)	0X16 (22,PORTG)	GPIO 0	N/A
SPDIF OUT	N/A	0X06 (6)	0X1E (30,SPDIF OUT)	N/A	0X1B (27,PORTE)

CODEC INPUT SIGNAL PATHS

FUNCTION	MIXER	VOLUME	MUTE CONTROL	CONVERTER	PIN COMPLEX	VREF	DET ASSIGNMENT
LINE IN	0X23 (35)	0X08 (8)	0X08 (8)	0X08 (8)	0X1A (26,PORTC)	N/A	0X1A (26,PORTC)
MIC IN	0X24 (36)	0X07 (7)	0X07 (7)	0X07 (7)	0X18 (24,PORTB)	VREF_B (80%)	N/A
SPDIF IN	N/A	N/A	N/A	0X0A (10)	0X1F (31,SPDIF IN)	N/A	N/A

PORT A DETECT

PORT E DETECT(SPDIF DELEGATE)

AUD_SENSE_B

AUD_SENSE_A

PP3V3_S0_AUDIO_F

R6801 270K 5% 1/16W MF-LF 402

Q6800 SSM6N15FE SOT563

AUD_OUTJACK_INSERT_L

R6806 39.2K 1% 1/16W MF-LF 402

AUD_PORTA_DET_L NC

R6805 39.2K 1% 1/16W MF-LF 402

AUD_PORTE_DET_L NC

Q6801 SSM6N15FE SOT563

Q6801 SSM6N15FE SOT563

AUD_J1_TIPDET_R

R6802 47K 5% 1/16W MF-LF 402

AUD_J1_DET_RC

C6801 0.1UF 10% 16V XSR 402

=GND_AUDIO_CODEC

R6803 100K 5% 1/16W MF-LF 402

PP3V3_S0_AUDIO_F

AUD_J1_SLEEVEDET_INV

R6861 270K 5% 1/16W MF-LF 402

Q6800 SSM6N15FE SOT563

AUD_J1_SLEEVEDET_R

C6802 0.01UF 10% 16V CERM 402

=GND_AUDIO_CODEC

HP/LO DE-POP SWITCH

APN:353S1459

PORT A HP/LO

=PP5V_S0_AUDIO

C6836 1UF 10% 6.3V CERM 402

AUD_BI_PORT_A_R

AUD_BI_PORT_A_L

U6801 MAX9890BETA+ TDFN CRITICAL

VCC INR INL SHDN* CEXT THM GND PAD OUTL OUTR

MAX9890_OUTL

MAX9890_OUTR

AUD_VREF_PORT_A

MAX9890_CEXT

C6835 0.1UF 10% 16V X5R 402

R6839 10K 5% 1/16W MF-LF 402

OMIT CRITICAL C6830 100UF 20% 6.3V POLY B2

OMIT CRITICAL C6831 100UF 20% 6.3V POLY B2

AUD_PORTA_L

AUD_PORTA_R

R6834 27.4K 1% 1/16W MF-LF 402

R6835 27.4K 1% 1/16W MF-LF 402

=GND_AUDIO_CODEC

PLACE L6800/C6800 CLOSE TO Q6800

L6800 FERR-1000-OHM 0402

=PP3V3_S0_AUDIO

PP3V3_S0_AUDIO_F

C6800 0.1UF 10% 16V XSR 402

AUD_J1_SLEEVEDET_R

=GND_AUDIO_CODEC

MIC INPUT CIRCUITRY

R6850 6.81K 1% 1/16W MF-LF 402

VREF_PORT_B_R

R6855 2.2K 5% 1/16W MF-LF 402

AUD_VREF_PORT_B

CRITICAL C6853 10UF 20% 6.3V XSR 603

=GND_AUDIO_CODEC

MIC_HI

R6851 330 5% 1/16W MF-LF 402

MIC_IN

C6850 0.1UF 10% 16V XSR 402

AUD_BI_PORT_B_L MAKE_BASE=TRUE

AUD_BI_PORT_B_R

CRITICAL C6851 680PF 10% 50V CERM 402

R6852 100K 5% 1/16W MF-LF 402

CRITICAL C6852 100PF 5% 50V CERM 402

NO STUFF

PLACE C6852 NEAR U6200

MIC_LO

XW6800 SM

=GND_AUDIO_CODEC

MIC_SHLD_CONN

NO STUFF R6853 0 5% 1/16W MF-LF 402

NO STUFF R6854 0 5% 1/16W MF-LF 402

=GND_CHASSIS_AUDIO_MIC

NO STUFF R6856 0 5% 1/16W MF-LF 402

Line-in (PORT C) DETECT

AUD_SENSE_A

PP3V3_S0_AUDIO_F

R6813 10K 5% 1/16W MF-LF 402

AUD_IN_JACK_INSERT_L NC

R6811 270K 5% 1/16W MF-LF 402

Q6802 SSM3K15FV SOD-VESM

R6812 47K 5% 1/16W MF-LF 402

AUD_J2_TIPDET_R

AUD_J2_DET_RC

C6811 0.1UF 10% 16V XSR 402

=GND_AUDIO_CODEC

PORT C LI

CRITICAL C6832 3.3UF 10% 16V TANT SMA-LF

AUD_PORTC_L

AUD_BI_PORT_C_L

R6836 27.4K 1% 1/16W MF-LF 402

=GND_AUDIO_CODEC

R6837 27.4K 1% 1/16W MF-LF 402

CRITICAL C6833 3.3UF 10% 16V TANT SMA-LF

AUD_PORTC_R

AUD_BI_PORT_C_R

AUDIO: JACK TRANSLATORS

SYNC_MASTER=M70AUDIO SYNC_DATE=03/12/2007

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

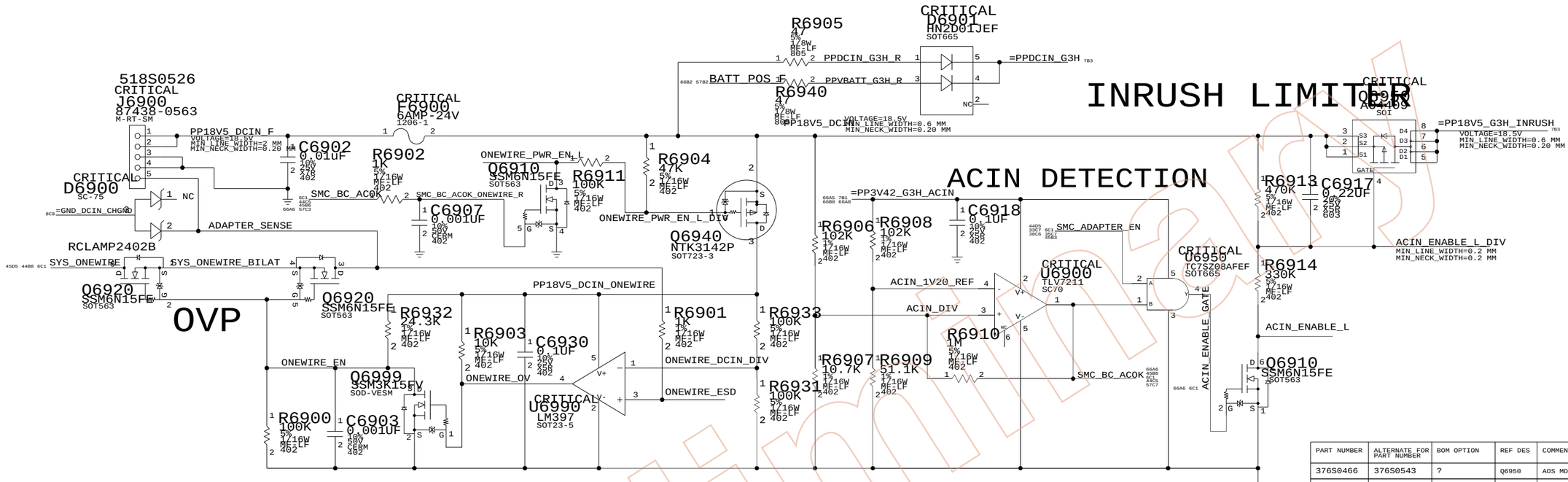
SIZE D | DRAWING NUMBER 051-7559 | REV. H

SCALE NONE | SHT 68 OF 106

Preliminary

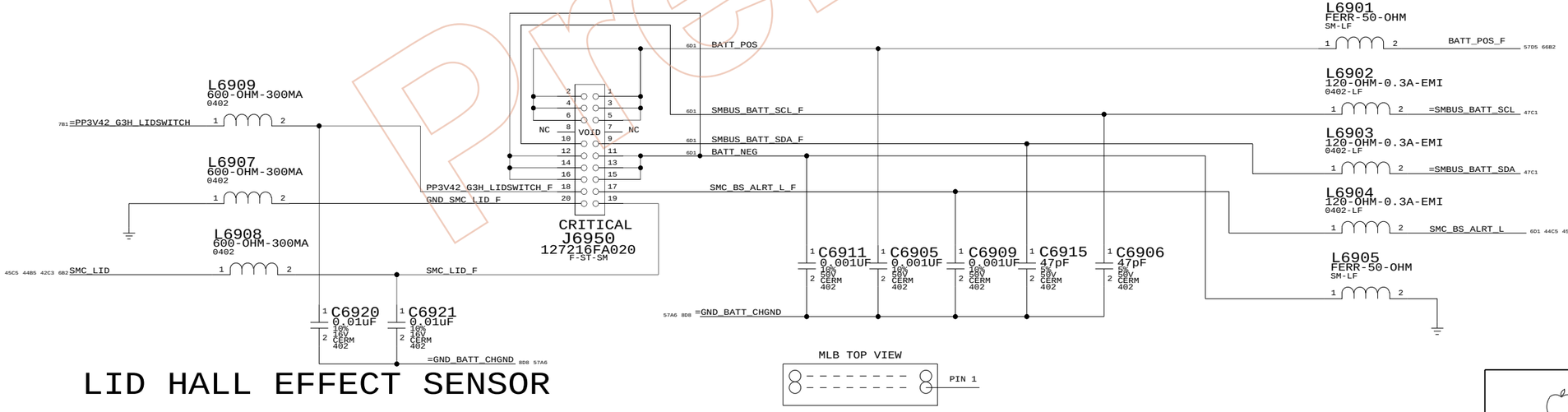
WWW.AliSaler.Com

DC-JACK INTERFACE



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
376S0466	376S0543	?	Q6950	AOS MOSFET
353S1717	353S1297	?	U6990	TI & NATIONAL

BATTERY INTERFACE



LID HALL EFFECT SENSOR

DC-In & Battery Connectors

SYNC_MASTER=POWER SYNC_DATE=07/13/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE

SHT 69 OF 106

Preliminary

WWW.AliSaler.Com

S0 FETS & POWER SEQUENCING

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
376S0448	376S0445	?	Q7000	

5V S0 FET

MOSFET	FDM6296
CHANNEL	N-TYPE
RDS(ON)	15 mOhm @4.5V
LOADING	4.348 A

3.3V S0 FET

MOSFET	FDC655BN
CHANNEL	N-TYPE
RDS(ON)	33 mOhm @4.5V
LOADING	1.810 A

1.8V S0 FET

MOSFET	FDC655BN
CHANNEL	N-TYPE
RDS(ON)	33 mOhm @4.5V
LOADING	0.260 A

1.05V S0 RUN/SS CONTROL

1.25V S0 RUN/SS CONTROL

1.5V S0 RUN/SS CONTROL

DEASSERTED 160MS
AFTER UVLO_D VALID

~26MS

MAKEBASE=TRUE
U7002.3 has int 90K pull-up

LATEST ISSUE: 2007/01/02

S0 FETS & Power Sequencing
SYNC_MASTER=DSIMON-WF SYNC_DATE=05/31/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE D | DRAWING NUMBER 051-7559 | REV. H
SCALE NONE | SHT 70 OF 106

Preliminary
WWW.AliSaler.Com

DPRSLPVR	DPRSTP*	PSI*	Operation Mode
0	1	1	2-Phase CCM
0	1	0	1-Phase CCM
1	0	1	1-Phase DCM
1	0	0	1-Phase DCM

PWM FREQ. = 300 kHz
MAX CURRENT = 44A

R1100/R1101 **ON THE CPU PAGE** PROTECT THE IMVP6 IF THE CPU IS NOT INSTALLED

NOTE 1: C7132,C7133 = 27.4 OHM FOR VALIDATING CPU ONLY.

IMVP6 CPU VCORE REGULATOR

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
IMVP6_PHASE1	1.5 MM	0.25 MM
IMVP6_BOOT1	0.25 MM	0.25 MM
IMVP6_UGATE1	1.5 MM	0.25 MM
IMVP6_LGATE1	1.5 MM	0.25 MM
IMVP6_ISEN1	0.25 MM	0.25 MM

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
IMVP6_PHASE2	0.25 MM	0.25 MM
IMVP6_BOOT2	0.25 MM	0.25 MM
IMVP6_UGATE2	0.25 MM	0.25 MM
IMVP6_LGATE2	0.25 MM	0.25 MM
IMVP6_ISEN2	0.25 MM	0.25 MM

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
IMVP6_OCSET	0.25 MM	0.20 MM
IMVP6_VSUM	0.25 MM	0.20 MM
GND_IMVP6_SGND	0.50 MM	0.20 MM
IMVP6_VO	0.25 MM	0.20 MM
IMVP6_DROOP	0.25 MM	0.20 MM
IMVP6_DFB	0.25 MM	0.20 MM
IMVP6_SOFT	0.25 MM	0.20 MM
IMVP6_RBIAS	0.25 MM	0.20 MM
IMVP6_VDIFF	0.25 MM	0.20 MM
IMVP6_FB2	0.25 MM	0.20 MM
IMVP6_FB	0.25 MM	0.20 MM
IMVP6_COMP	0.25 MM	0.20 MM
IMVP6_VW	0.25 MM	0.25 MM
CPU_VCCSENSE_P	0.25 MM	0.25 MM
CPU_VCCSENSE_N	0.25 MM	0.25 MM
IMVP6_RTN	0.25 MM	0.25 MM
IMVP6_VSEN	0.25 MM	0.25 MM

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0093	128S0092	?	C7101,C7108	KEMET T520V336M016ATE045/E60
128S0093	128S0092	?	C7109,C7117	KEMET T520V336M016ATE045/E60

IMVP6 CPU VCore Regulator
SYNC_MASTER=POWER SYNC_DATE=07/13/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

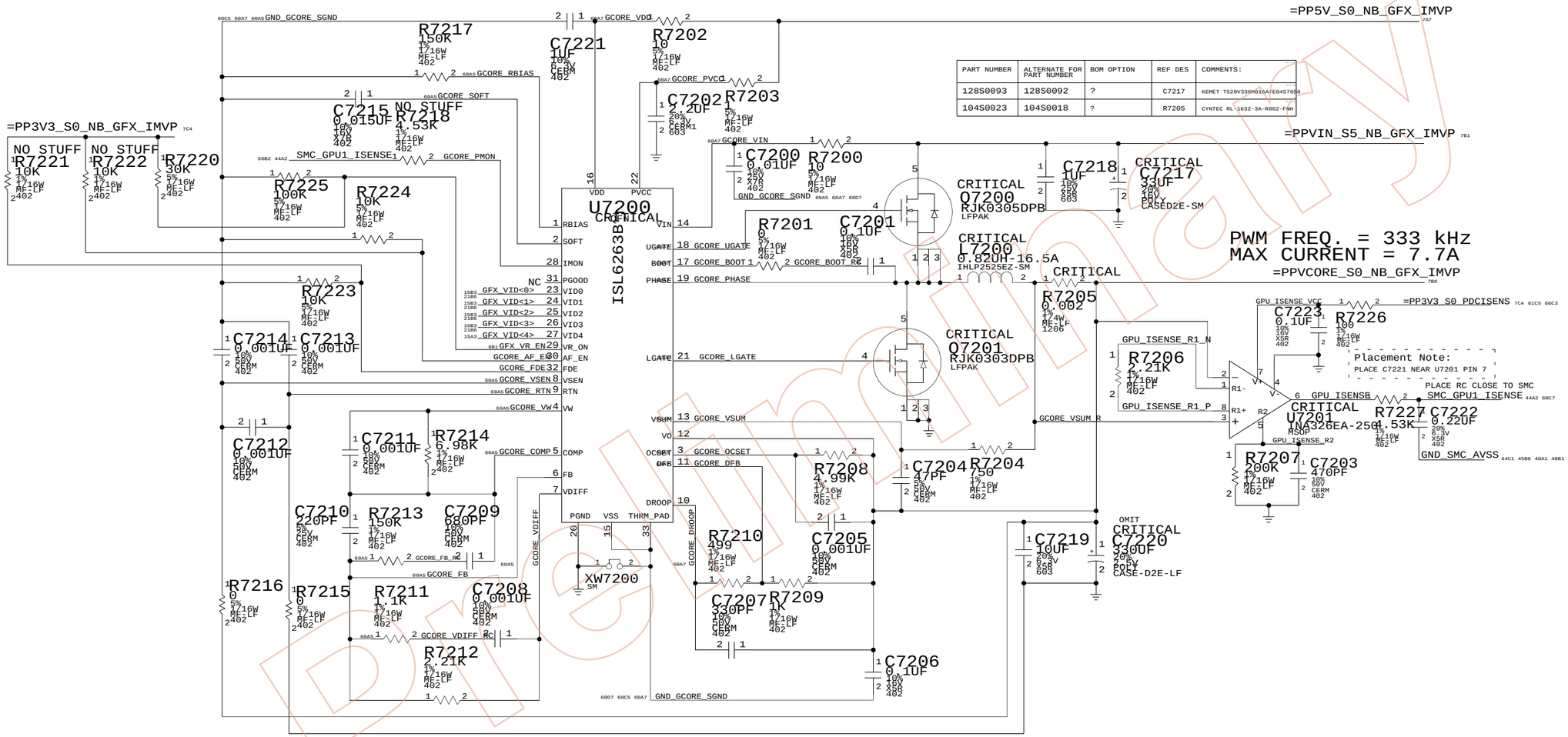
APPLE INC.

SIZE D | DRAWING NUMBER 051-7559 | REV. H
SCALE NONE | SHT 71 OF 106

LATEST ISSUE: 2007/01/23

WWW.AliSaler.Com

RENDER VCORE POWER SUPPLY



	MIN_LINE_WIDTH	MIN_NECK_WIDTH
GCORE_PHASE	1 MM	0.25 MM
GCORE_BOOT	0.3 MM	0.25 MM
GCORE_UGATE	1 MM	0.25 MM
GCORE_LGATE	1 MM	0.25 MM
GCORE_BOOT_RC	0.3 MM	0.25 MM
GND_GCORE_SGND	0.6 MM	0.25 MM
GCORE_VDD	0.3 MM	0.25 MM
GCORE_PVCC	0.3 MM	0.25 MM
GCORE_VIN	0.3 MM	0.25 MM
GCORE_DROOP	0.3 MM	0.25 MM
GCORE_VSUM	0.3 MM	0.25 MM
GCORE_DFB	0.3 MM	0.25 MM

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
GCORE_OCSET	0.3 MM	0.25 MM
GCORE_VW	0.3 MM	0.25 MM
GCORE_RTN	0.3 MM	0.25 MM
GCORE_VSEN	0.3 MM	0.25 MM
GCORE_RBIAS	0.3 MM	0.25 MM
GCORE_SOFT	0.3 MM	0.25 MM
GCORE_COMP	0.3 MM	0.25 MM
GCORE_FB	0.3 MM	0.25 MM
GCORE_VDIFF	0.3 MM	0.25 MM
GCORE_FB_RC	0.3 MM	0.25 MM
GCORE_VDIFF_RC	0.3 MM	0.25 MM

Render VCore Supplies

SYNC_MASTER=GPU SYNC_DATE=06/29/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE D | DRAWING NUMBER 051-7559 | REV. H

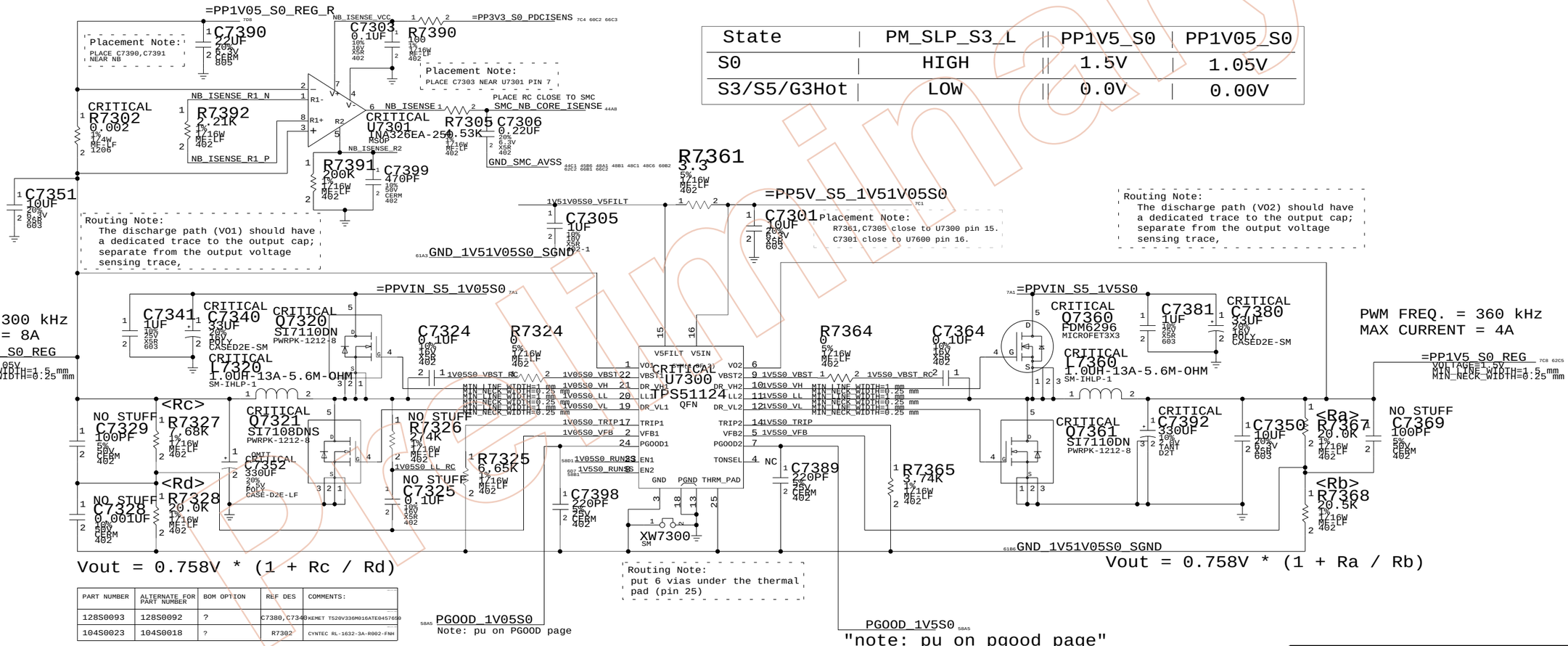
SCALE NONE | SHT 72 OF 106

LATEST ISSUE: 2006/12/22

WWW.AliSaler.Com

1.5V/1.05V POWER SUPPLY

State	PM_SLP_S3_L	PP1V5_S0	PP1V05_S0
S0	HIGH	1.5V	1.05V
S3/S5/G3Hot	LOW	0.0V	0.00V



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0093	128S0092	?	C7380,C7340	KEMET T520V336M016ATE045 7650
104S0023	104S0018	?	R7302	CYNTEC RL-1632-3A-R002-FNH

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
376S0448	376S0445	?	Q7360	

LATEST ISSUE: 2006/12/22

1.5V / 1.05V Supplies

SYNC_MASTER=POWER SYNC_DATE=07/13/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE D | DRAWING NUMBER 051-7559 | REV. H

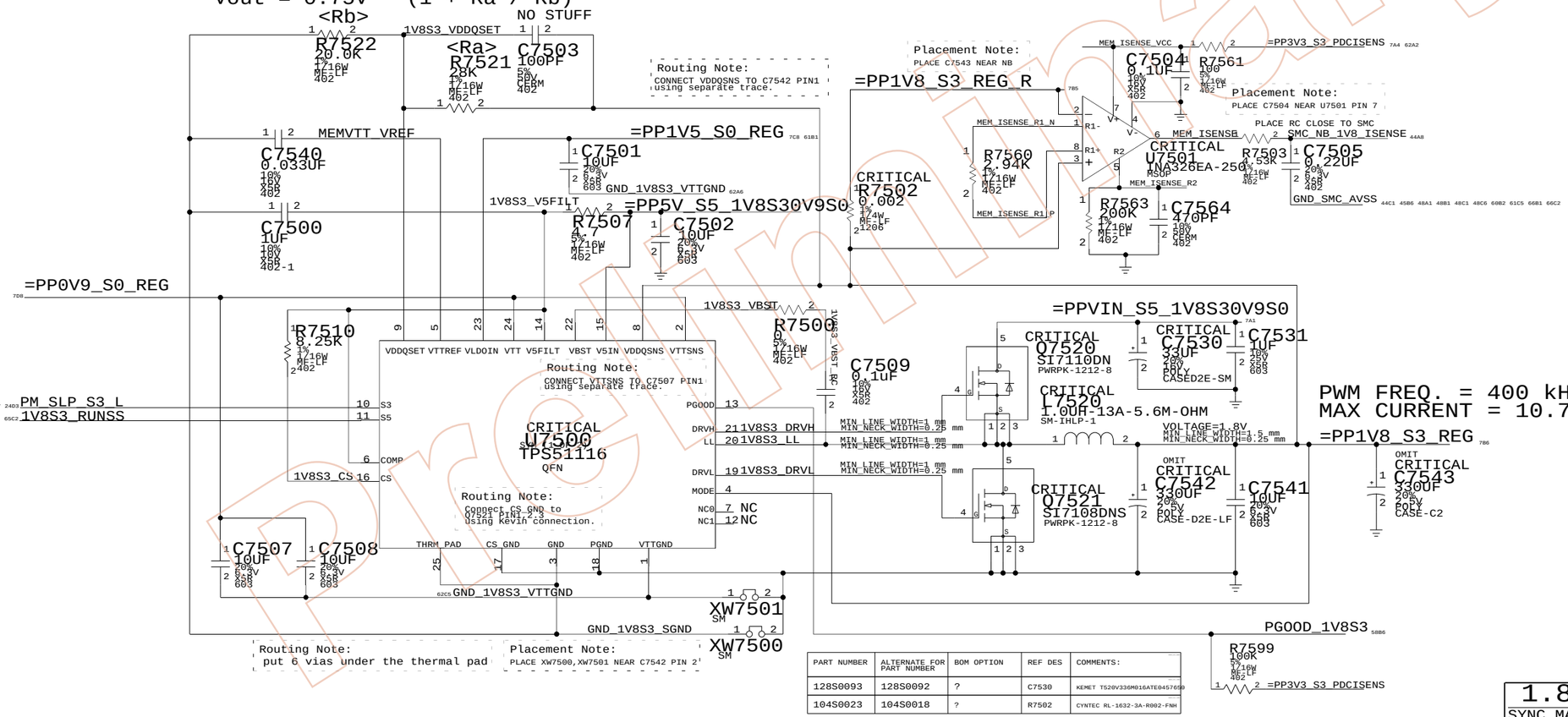
SCALE NONE | SHT 73 OF 106

WWW.AliSaler.Com

1.8V/0.9V POWER SUPPLY

State	PM_SLP_S4	PM_SLP_S3	PP1V8_S3	PP0V9_S0
S0	HIGH	HIGH	1.8V	0.9V
S3	HIGH	LOW	1.8V	0.0V
S5/G3Hot	LOW	LOW	0.0V	0.0V

Vout = 0.75V * (1 + Ra / Rb)



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0093	128S0092	?	C7530	KEMET T520V336M016ATE0457650
104S0023	104S0018	?	R7502	CYNTEC RL-1632-3A-R002-FNH

LATEST ISSUE: 2006/12/22

1.8V/0.9V Supplies

SYNC_MASTER=POWER SYNC_DATE=07/13/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE D | DRAWING NUMBER 051-7559 | REV. H

SCALE NONE | SHT 75 OF 106

WWW.AliSaler.Com

5V/3.3V POWER SUPPLY

State	SMC_PM_G2_EN	PP3V3_G3H	PP5V_S5	PP3V3_S5
G3H	LOW	3.3V	0.0V	0.0V
S0/S3/S5	HIGH	3.3V	5.0V	3.3V

Vout = 1V * (1 + Ra / Rb)

Vout = 1V * (1 + Rc / Rd)

Routing Note:
The discharge path (VO1) should have a dedicated trace to the output cap; separate from the output voltage sensing trace,

Routing Note:
The discharge path (VO2) should have a dedicated trace to the output cap; separate from the output voltage sensing trace,

Routing Note:
put 6 vias under the thermal pad (pin 33)

PWM FREQ. = 280 kHz
MAX CURRENT = 7.5A

PWM FREQ. = 430 kHz
MAX CURRENT = 5A

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0093	128S0092	?	C7682,C7680	KEMET T520V336M016ATE045/650
128S0093	128S0092	?	C7640	KEMET T520V336M016ATE045/650
376S0448	376S0445	?	Q7620	KEMET T520V336M016ATE045/650
152S0093	152S0133	?	L7620	MAGLAYER IHLP2525CZ-2SM

Placement Note:
R7601,C7605 close to U7600 pin 20.
C7602 close to U7600 pin 22.
C7604 close to U7600 pin 21.
C7603 CLOSE TO U7600 PIN 19.
R7605,R7603 close to U7600.

LATEST ISSUE: 2006/12/22

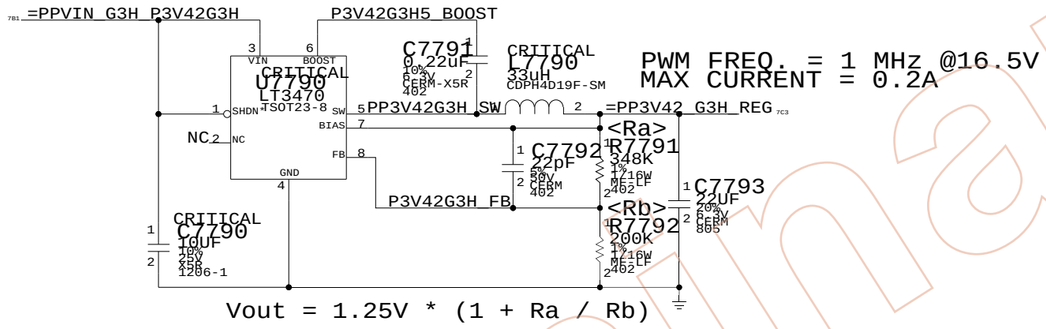
5V/3.3V Supplies
SYNC_MASTER=POWER SYNC_DATE=07/13/2005

NOTICE OF PROPRIETARY PROPERTY
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

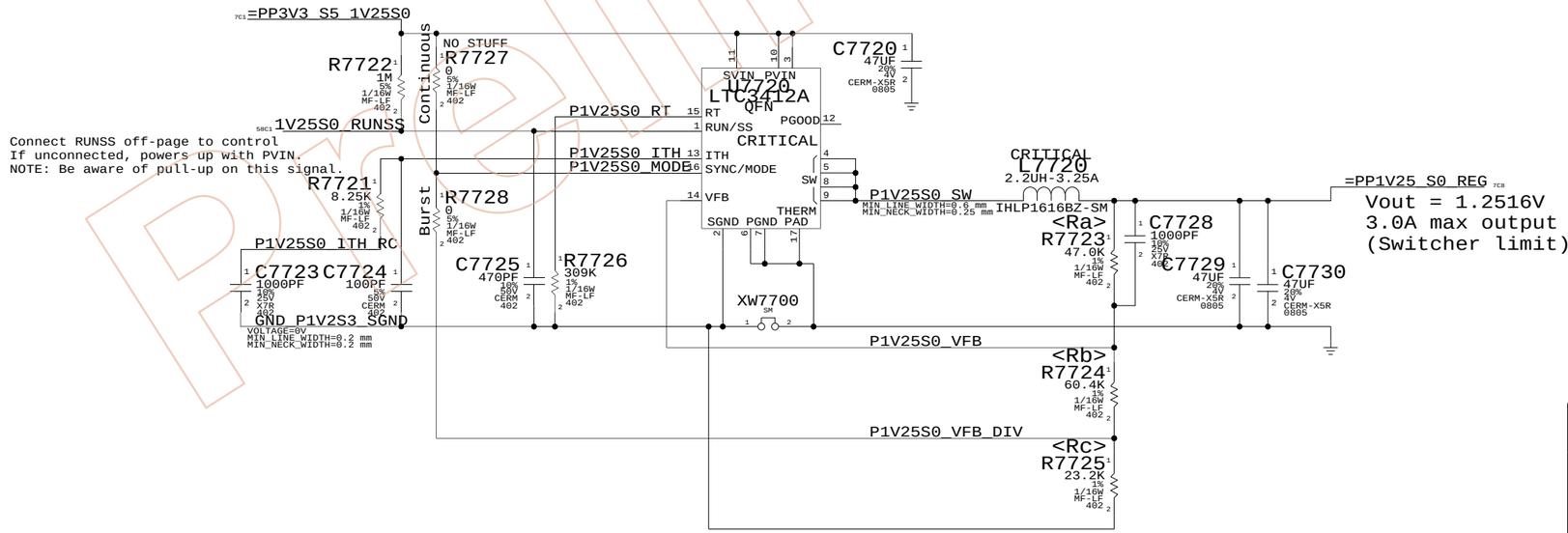
APPLE INC.
SIZE D | DRAWING NUMBER 051-7559 | REV. H
SCALE NONE | SHT 76 OF 106

Preliminary
WWW.AliSaler.Com

3.425V G3H SUPPLY



1.25V S0 REGULATOR



LATEST ISSUE: 2007/3/8

3.42V/1.25V Switcher

SYNC_MASTER=ENETSYNC_DATE=12/06/2005

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

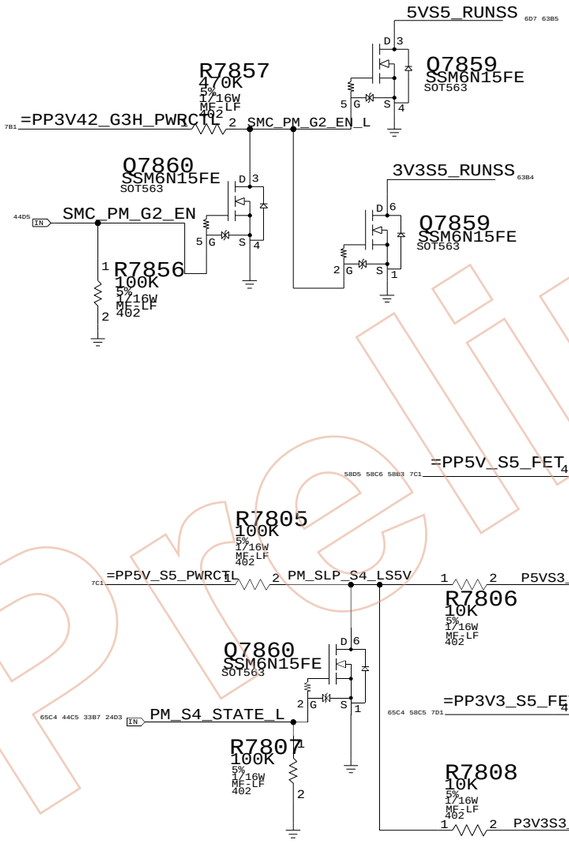
SCALE: NONE | SHT 77 OF 106

Preliminary

WWW.AliSaler.Com

S3 FETS & S3/S5 CONTROL

5V/3.3V S5 RUN/SS CONTROL



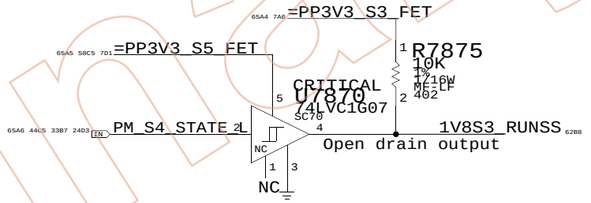
5V S3 FET

MOSFET	FDC638P
CHANNEL	P-TYPE
RDS(ON)	48 mOhm @4.5V
LOADING	0.051 A

3.3V S3 FET

MOSFET	FDC638P
CHANNEL	P-TYPE
RDS(ON)	65 mOhm @2.5V
LOADING	0.098 A

1.8V S3 RUN/SS CONTROL



LATEST ISSUE: 2006/12/22

S3 FET & S3/S5 Control

SYNC_MASTER=DSIMONWU DATE=06/12/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

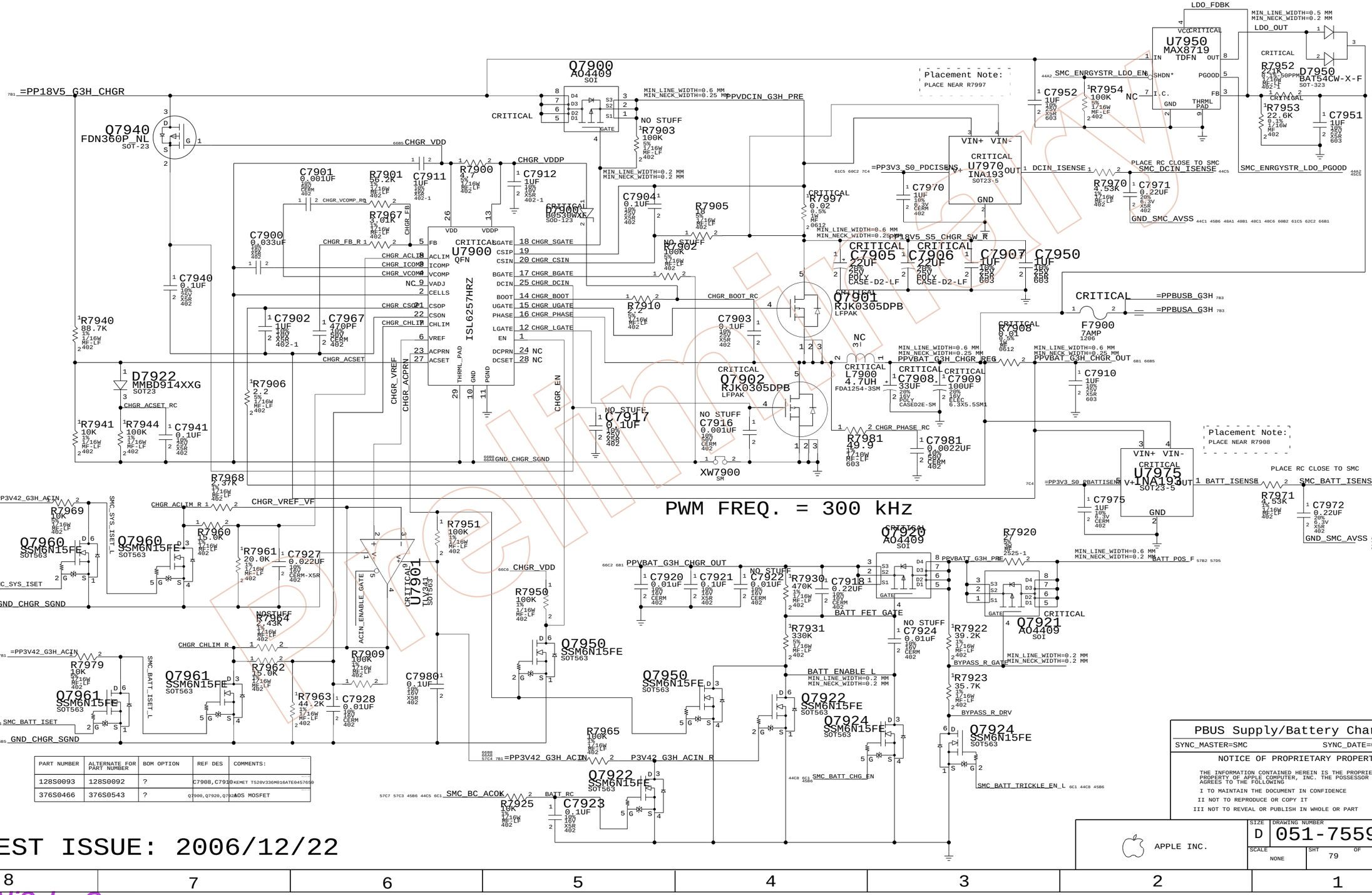
SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE | SHT 78 OF 106

Preliminary

WWW.AliSaler.Com

PBUS SUPPLY / BATTERY CHARGER



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0093	128S0092	?	C7908,C7910	KEMET T520V336M016ATE045760
376S0466	376S0543	?	Q7900,Q7920,Q7922	AOS MOSFET

LATEST ISSUE: 2006/12/22

WWW.AliSaler.Com

INVERTER CONNECTOR

LCD + CAMERA CONNECTOR

=PP5V_S0_LCD
R9000 100K 5% 1/16W MF-LF 402
R9001 100K 1% 1/16W MF-LF 402
INV_PWREN_F
INV_PWREN_L
Q9006 SSM3K15FV SOD-VESM
LVDS_BKLT_EN
Q9005 NTK3142P SOT723-3
PP5V_INV MIN_LINE_WIDTH=0.30 MM MIN_NECK_WIDTH=0.20 MM VOLTAGE=5V
C9014 0.0022UF 10% 50V CERM 402
L9003 FERR-120-OHM-1.5A 0402-LF
=PPBUS_S5_INV
PPBUS_ALL_INV_CONN VOLTAGE=12.6V MIN_LINE_WIDTH=0.30 MM MIN_NECK_WIDTH=0.20 MM
R9003 0 5% 1/16W MF-LF 402
L9000 120-OHM-0.3A-EMI 0402-LF
PP5V_INV_F VOLTAGE=5V MIN_LINE_WIDTH=0.30 MM MIN_NECK_WIDTH=0.20 MM
L9001 120-OHM-0.3A-EMI 0402-LF
CRITICAL J9000 78171-0004 M-RT-SM 518S0521
INV_GND
INV_BKLIGHT_PWM
=PP3V3_S0_LCD
CRITICAL U9053 TC7SZ08AFEF SOT665
PLT_RST_L
LVDS_BKLT_CTL
BKLIGHT_CTL
C9059 0.1UF 10% 16V X5R 402
C9001 100PF 5% 50V C0G 402
C9002 1000PF 10% 25V X7R 402
R9004 0 5% 1/16W MF-LF 402
C9000 1000PF 10% 25V X7R 402
INVT_CHGND
THIS GND CONECTS TO CHASSIS GND

=PP3V3_S5_LCD
R9002 100K 5% 1/16W MF-LF 402
R9023 10K 5% 1/16W MF-LF 402
LCDVDD_PWREN
LCDVDD_PWREN_R
Q9004 SSM3K15FV SOD-VESM
CRITICAL Q9003 FDC606P SOT-6
C9013 0.0033UF 10% 50V CERM 402
PP3V3_LCDVDD_SW VOLTAGE=3.3V MIN_LINE_WIDTH=0.30 MM MIN_NECK_WIDTH=0.20 MM
C9011 0.1UF 10% 16V X5R 402
C9012 10UF 20% 6.3V X5R 603
LVDS_VDD_EN
R9014 100K 1% 1/16W MF-LF 402
=PP3V3_S0_LCD
R9008 10K 5% 1/16W MF-LF 402
R9009 10K 5% 1/16W MF-LF 402
LVDS_DDC_CLK
LVDS_DDC_DATA
L9004 FERR-120-OHM-1.5A 0402-LF
L9008 120-OHM-0.3A-EMI 0402-LF
=GND_CHASSIS_LVDS
PP3V3_LCDVDD_SW_F VOLTAGE=3.3V MIN_LINE_WIDTH=0.30 MM MIN_NECK_WIDTH=0.20 MM
PP3V3_S0_LCD_F (LVDS DDC POWER) VOLTAGE=3.3V MIN_LINE_WIDTH=0.25 MM MIN_NECK_WIDTH=0.20 MM
C9009 0.001UF 10% 50V CERM 402
CRITICAL J9001 S-050162B F-RT-SM
LVDS_A_DATA_N<0>
LVDS_A_DATA_P<0>
LVDS_A_DATA_N<1>
LVDS_A_DATA_P<1>
LVDS_A_DATA_N<2>
LVDS_A_DATA_P<2>
LVDS_A_CLK_F_N
LVDS_A_CLK_F_P
CRITICAL L9006 90-OHM-200MA SM SYM_VER-1
LVDS_A_CLK_N
LVDS_A_CLK_P
CRITICAL L9007 90-OHM-200MA SM SYM_VER-1
=USB2_CAMERA_P
=USB2_CAMERA_N
USB2_CAMERA_CONN_P
USB2_CAMERA_CONN_N
L9005 FERR-120-OHM-1.5A 0402-LF
=PP5V_S3_CAMERA
PP5V_S3_CAMERA_F VOLTAGE=5V MIN_NECK_WIDTH=0.20 MM MIN_LINE_WIDTH=0.30 MM
MIC_LO_LVDS_CONN
MIC_HI_LVDS_CONN
=GND_CHASSIS_LVDS
LCD I/F
CAMERA I/F
Plexi: 516S0212
*Enclosure: 518S0364

R9015 10K 5% 1/16W MF-LF 402 NOSTUFF
R9016 10K 5% 1/16W MF-LF 402 NOSTUFF
LVDS_CTRL_CLK
LVDS_CTRL_DATA
L9010 FERR-1000-OHM 0402 NOSTUFF
L9011 FERR-1000-OHM 0402 NOSTUFF
L9012 FERR-1000-OHM 0402 NOSTUFF
MIC_LO_LVDS
MIC_HI_LVDS
MIC_SHIELD_LVDS
C9016 0.001UF 10% 50V CERM 402
C9015 0.001UF 10% 50V CERM 402
C9010 0.001UF 10% 50V CERM 402
C9008 0.001UF 10% 50V CERM 402
LVDS REFERENCE CURRENT,2.37K OHM PULL DOWN RESISTOR NEEDED
R9013 2.37K 1% 1/16W MF-LF 402
LVDS_IBG
CRITICAL DZ9000 8V-100PF 402-1 NOSTUFF
CRITICAL DZ9001 8V-100PF 402-1 NOSTUFF

INVERTER,LVDS,TMDS

SYNC_MASTER=GPU SYNC_DATE=06/23/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

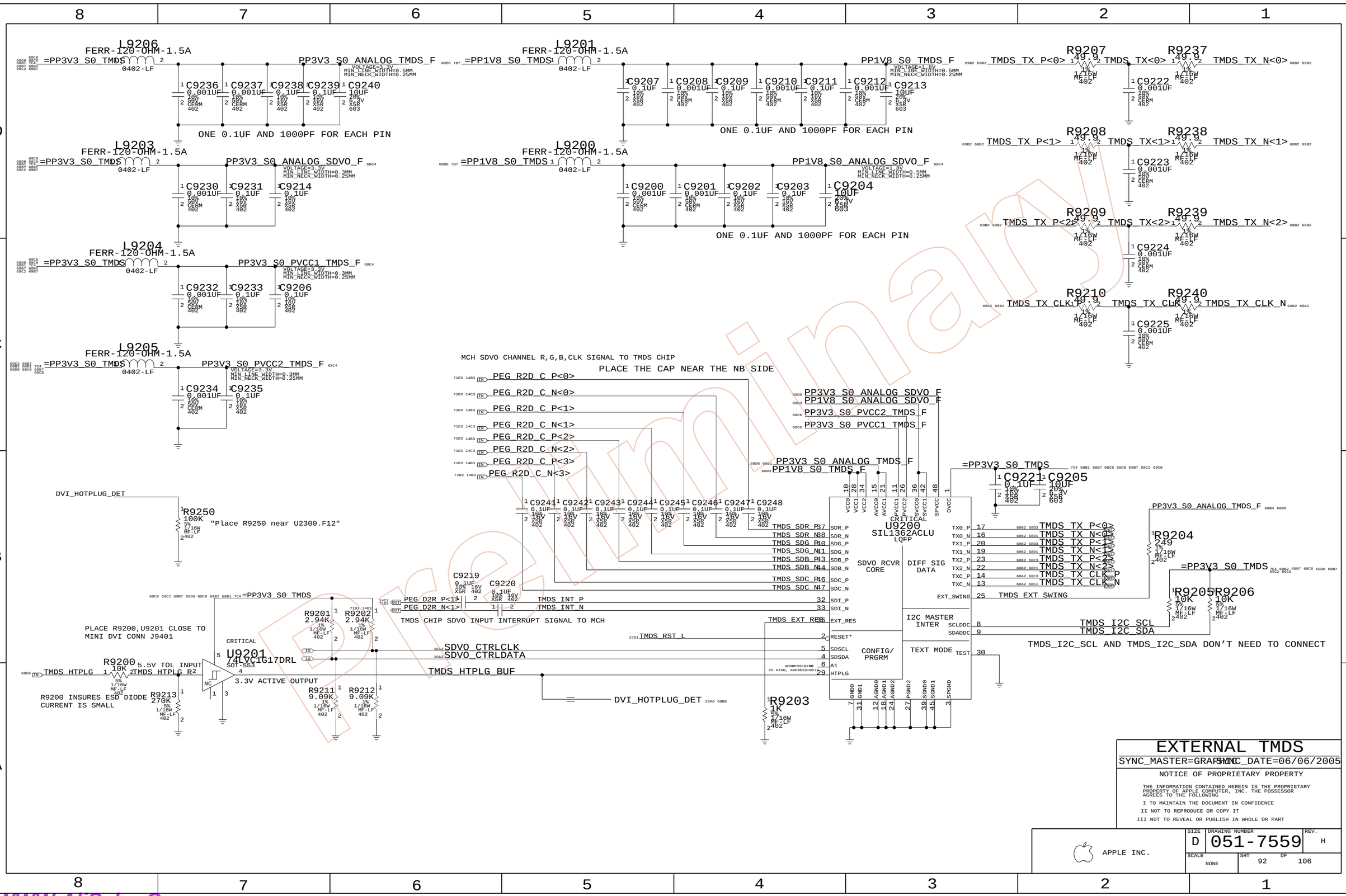
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 90 OF 106	

Preliminary

WWW.AliSaler.Com



WWW.AliSaler.Com

NB VIDEO ALIASES

=CRT_TVO_IREF	CRT_TVO_IREF		
=TV_A_DAC	TV_A_DAC	MAKE_BASE=TRUE	69B8 71C3
=TV_B_DAC	TV_B_DAC	MAKE_BASE=TRUE	69B8 71C3
=TV_C_DAC	TV_C_DAC	MAKE_BASE=TRUE	69A8 71C3
=CRT_BLUE	CRT_BLUE	MAKE_BASE=TRUE	69B8 71C3
=CRT_GREEN	CRT_GREEN	MAKE_BASE=TRUE	69A8 71C3
=CRT_RED	CRT_RED	MAKE_BASE=TRUE	69A8 71C3
=CRT_HSYNC_R	CRT_HSYNC_R	MAKE_BASE=TRUE	69C3 71C3
=CRT_VSYNC_R	CRT_VSYNC_R	MAKE_BASE=TRUE	69C3 71C3

Video Connectors

EXTERNAL VIDEO (VGA) INTERFACE

Isolation required for DVI power switch

TMDS(MINI DVI) INTERFACE

A 1.3K OHM 1% RESISTOR IS REQUIRED BETWEEN CRT_IREF AND GROUND

R9469 1.21K 1% 1/16W MF-LF 402

CRT_TVO_IREF

F9404 0.5AMP-13.2V SM-LF CRITICAL

=PP5V_S0_TMDS (VOLTAGE=5V, MIN_LINE_WIDTH=0.30 MM, MIN_NECK_WIDTH=0.20 MM) → PP5V_S0_TMDS_FUSE (VOLTAGE=5V, MIN_LINE_WIDTH=0.5 MM, MIN_NECK_WIDTH=0.25 MM)

D9401 ISS418 SOD-723

L9444 600-OHM-300MA 0402

PP5V_S0_DVIPORT (VOLTAGE=5V, MIN_LINE_WIDTH=0.5 MM, MIN_NECK_WIDTH=0.25 MM)

C9404 0.1UF 20% 16V X5R CERM 402

=GND_CHASSIS_TMDS_UPPER

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
740S0044	740S0028	?	F9404	

PP5V_S0_DVIPORT_D

DVI power DIODE on page 95 (D9500)

=PP3V3_S0_NB

R9466 2.2K 5% 1/16W MF-LF 402

R9467 2.2K 5% 1/16W MF-LF 402

TV_DCONSEL<0>

TV_DCONSEL<1>

R9462 2.2K 5% 1/16W MF-LF 402

R9463 2.2K 5% 1/16W MF-LF 402

TMDS_HTPLG

C9410 0.001UF 10% 50V CERM 402

=PP3V3_S0_TMDS

R9421 2.2K 5% 1/16W MF-LF 402

R9422 2.2K 5% 1/16W MF-LF 402

Q9401 SSM6N15FE SOT563

GPU_CRT_DDC_CLK

CRT_DDC_CLK

CRT_DDC_DATA

Q9401 SSM6N15FE SOT563

GPU_CRT_DDC_DATA

C9411 100PF 5% 50V CERM 402

C9412 100PF 5% 50V CERM 402

NOTE: CRT_DDC_* ARE NOT 5V COMPLIANT

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
155S0370	155S0348	?	L9404	MURATA ALTERNATIVE

PLACE R9450 R9451 CLOSE TO GMCH

TV_A_DAC

CRT_BLUE

R9450 75 1% 1/16W MF-LF 402

R9451 75 1% 1/16W MF-LF 402

=TV_A_RTN

=CRT_BLUE_L

=PP3V3_S0_TMDS

C9439 0.1UF 10% 16V X5R 402

EXT_COMPVID_B

CRITICAL

U9401 TS3V330 SOP

EXT_Y_G

EXT_C_R

FL9400 210MHZ MEA2010P-SM CRITICAL

PLACE R9452 R9453 CLOSE TO GMCH

TV_B_DAC

CRT_GREEN

R9452 75 1% 1/16W MF-LF 402

R9453 75 1% 1/16W MF-LF 402

=TV_B_RTN

=CRT_GREEN_L

PLACE R9454 R9455 CLOSE TO GMCH

TV_C_DAC

CRT_RED

R9454 75 1% 1/16W MF-LF 402

R9455 75 1% 1/16W MF-LF 402

=TV_C_RTN

=CRT_RED_L

SB_CRT_TVOUT_MUX_L

PLACE THE RESISTOR CLOSE TO GMCH AND THE CAP NEAR CONNECTOR

=PP3V3_S0_TMDS

C9460 0.1UF 20% 16V CERM 402

CRITICAL U9404 SN74LVC2G125DCU

CRT_HSYNC_R

R9460 39 5% 1/16W MF-LF 402

CRT_HSYNC_LS_R

R9470 39 5% 1/16W MF-LF 402

CRT_HSYNC_LS

VGA_HSYNC

C9442 33PF 5% 50V CERM 402 NOSTUFF

PLACE THE RESISTOR CLOSE TO GMCH AND THE CAP NEAR THE CONNECTOR

CRITICAL U9404 SN74LVC2G125DCU

CRT_VSYNC_R

R9461 39 5% 1/16W MF-LF 402

CRT_VSYNC_LS_R

R9471 39 5% 1/16W MF-LF 402

CRT_VSYNC_LS

VGA_VSYNC

C9443 33PF 5% 50V CERM 402 NOSTUFF

OMIT CRITICAL J9401 MINI-DVI-M42-BLK F-RT-TH

PP5V_S0_DVIPORT

NC NC

VGA_B VGA_HSYNC VGA_G VGA_VSYNC VGA_R

TMDS_TX_CONN_P<2>
TMDS_TX_CONN_N<2>
TMDS_TX_CONN_P<1>
TMDS_TX_CONN_N<1>
TMDS_TX_CONN_P<0>
TMDS_TX_CONN_N<0>
TMDS_TX_CONN_CLK_P
TMDS_TX_CONN_CLK_N

514-0376

=GND_CHASSIS_TMDS_UPPER =GND_CHASSIS_TMDS_DOWN

C9421 0.1UF 10% 16V X5R 402 NOSTUFF

OMIT CRITICAL L9405 90-OHM-100MA 1210-4SM1

TMDS_TX_P<2>
TMDS_TX_N<2>

OMIT CRITICAL L9407 90-OHM-100MA 1210-4SM1

TMDS_TX_P<1>
TMDS_TX_N<1>

OMIT CRITICAL L9406 90-OHM-100MA 1210-4SM1

TMDS_TX_P<0>
TMDS_TX_N<0>

CRITICAL L9404 300-OHM-200MA 1210-4SM

TMDS_TX_CLK_P
TMDS_TX_CLK_N

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
155S0371	3	TDK AND MURATA	L9405,L9406,L9407	CRITICAL	K36

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0480	1	CONN,REC,MINI-DVI,32P,RA,TABS,MG3	J9401	CRITICAL	NORMAL
514-0481	1	CONN,REC,MINI-DVI,32P,RA,TABS,BLK	J9401	CRITICAL	FANCY

MINI-DVI CONNECTOR

SYNC_MASTER=EUGENE SYNC_DATE=05/21/05

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H
SCALE: NONE	SHT 94 OF 106	

Preliminary
WWW.AliSaler.Com

FSB (Front-Side Bus) Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
FSB_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
FSB_DSTB_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=1:1_DIFFPAIR	=1:1_DIFFPAIR

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
FSB_ADDR	*	=3:1_SPACING	?
FSB_ADDR2ADDR	*	=2:1_SPACING	?
FSB_ADSTB	*	=3:1_SPACING	?
FSB_ADDR2ADSTB	*	=3:1_SPACING	?

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
FSB_DATA	*	=3:1_SPACING	?
FSB_DATA2DATA	*	=2:1_SPACING	?
FSB_DSTB	*	=3:1_SPACING	?
FSB_DATA2DSTB	*	=3:1_SPACING	?

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
FSB_COMMON	*	=2:1_SPACING	?

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
FSB_ADDR	FSB_ADDR	*	FSB_ADDR2ADDR
FSB_ADDR	FSB_ADSTB	*	FSB_ADDR2ADSTB
FSB_DATA	FSB_DATA	*	FSB_DATA2DATA
FSB_DATA	FSB_DSTB	*	FSB_DATA2DSTB

All FSB signals with impedance requirements are 55-ohm single-ended.
Worst-case spacing is 2:1 within Addr bus, with 3:1 spacing to the ADSTBs.
Worst-case spacing is 2:1 within Data bus, with 3:1 spacing to the DSTBs.
DSTB complementary pairs are spaced 1:1 and routed as differential pairs.

Design Guide recommends each strobe/signal group is routed on the same layer.
Design Guide recommends FSB signals be routed only on internal layers.

NOTE: Design Guide does not indicate FSB spacing to other signals, assumed 3:1.
NOTE: Design Guide allows closer spacing if signal lengths can be shortened.

SOURCE: Santa Rosa Platform DG, Rev 0.9 (#20517), Sections 4.2 & 4.3

CPU Signal Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
CPU_27P4S	*	Y	=27P4_OHM_SE	=27P4_OHM_SE	=27P4_OHM_SE	7 MIL	7 MIL
CPU_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

NOTE: 7 mil gap is for VCCSense pair, which Intel says to route with 7 mil spacing without specifying a target differential impedance.

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
CPU_2TO1	*	=2:1_SPACING	?
CPU_COMP	*	25 MIL	?
CPU_GTLREF	*	25 MIL	?
CPU_ITP	*	=2:1_SPACING	?
CPU_VCCSENSE	*	25 MIL	?

DG recommends at least 25 mils, >50 mils preferred

Most CPU signals with impedance requirements are 55-ohm single-ended.
Some signals require 27.4-ohm single-ended impedance.

SOURCE: Santa Rosa Platform DG, Rev 0.9 (#20517), Sections 4.4 & 5.8.2.4

CPU / FSB Net Properties

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_ADS_L	9D6 13C3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_BNR_L	9D6 13C3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_BPRI_L	9D6 13C3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_BREQ0_L	9D6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_DBSY_L	9D6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_DEFER_L	9D6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_DPWR_L	9B2 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_DRDY_L	9D6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_HIT_L	9C6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_HITM_L	9C6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_LOCK_L	9D6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_RS_L<2..0>	9D6 13A3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_TRDY_L	9D6 13B3
FSB_CPURST_L	FSB_55S	FSB_COMMON	FSB_CPURST_L	9D6 12B5 13A5
FSB_DATA_GROUP0	FSB_55S	FSB_DATA	FSB_D_L<15..0>	9C4 13C5 13D5
FSB_DATA_GROUP0	FSB_55S	FSB_DATA	FSB_DINV_L<0>	9C4 13B3
FSB_DSTB0	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_P<0>	9C4 13B3
	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_N<0>	9C4 13B3
FSB_DATA_GROUP1	FSB_55S	FSB_DATA	FSB_D_L<31..16>	9B4 9C4 13C5
FSB_DATA_GROUP1	FSB_55S	FSB_DATA	FSB_DINV_L<1>	9B4 13B3
FSB_DSTB1	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_P<1>	9B4 13B3
	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_N<1>	9B4 13B3
FSB_DATA_GROUP2	FSB_55S	FSB_DATA	FSB_D_L<47..32>	9C2 13B5 13C5
FSB_DATA_GROUP2	FSB_55S	FSB_DATA	FSB_DINV_L<2>	9C2 13B3
FSB_DSTB2	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_P<2>	9C2 13A3
	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_N<2>	9C2 13B3
FSB_DATA_GROUP3	FSB_55S	FSB_DATA	FSB_D_L<63..48>	9B2 9C2 13B5
FSB_DATA_GROUP3	FSB_55S	FSB_DATA	FSB_DINV_L<3>	9B2 13B3
FSB_DSTB3	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_P<3>	9B2 13A3
	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_N<3>	9B2 13B3
FSB_ADDR_GROUP0	FSB_55S	FSB_ADDR	FSB_A_L<16..3>	9D8 13C3 13D3
FSB_ADDR_GROUP0	FSB_55S	FSB_ADDR	FSB_REQ_L<4..0>	9C8 9D8 13A3
FSB_ADSTB0	FSB_55S	FSB_ADSTB	FSB_ADSTB_L<0>	9D8 13C3
FSB_ADDR_GROUP1	FSB_55S	FSB_ADDR	FSB_A_L<35..17>	9C8 13C3
FSB_ADSTB1	FSB_55S	FSB_ADSTB	FSB_ADSTB_L<1>	9C8 13C3
CPU_IERR_L	CPU_55S		CPU_IERR_L	9D6
CPU_FERR_L	CPU_55S		CPU_FERR_L	9C8 22C2
CPU_PROCHOT_L	CPU_55S	CPU_2TO1	CPU_PROCHOT_L	9C5 45B5 45C3 59C8
CPU_PWRGD	CPU_55S		CPU_PWRGD	9B2 12B1 22C4
CPU_FROM_SB	CPU_55S		CPU_INTR	9B8 22C4
CPU_FROM_SB	CPU_55S		CPU_NMI	9B8 22C4
CPU_FROM_SB	CPU_55S		CPU_A20M_L	9C8 22C4
CPU_FROM_SB	CPU_55S		CPU_DPSLP_L	9B2 22C4
CPU_FROM_SB	CPU_55S		CPU_IGNNE_L	9C8 22C4
CPU_INIT_L	CPU_55S		CPU_INIT_L	9D6 22C4 46B2
CPU_FROM_SB	CPU_55S		CPU_SMI_L	9B8 22C4
CPU_FROM_SB	CPU_55S		CPU_STPCLK_L	9B8 22C4
PM_THRMTRIP_L	CPU_55S	CPU_2TO1	PM_THRMTRIP_L	9C6 15A6 22C2 45B3
FSB_CPUSLP_L	CPU_55S		FSB_CPUSLP_L	9A2 13A5
PM_DPRSLPVR	CPU_55S	CPU_2TO1	PM_DPRSLPVR	15A6 24C3 59D8
(See above)	CPU_55S	CPU_2TO1	IMVP_DPRSLPVR	59C7
CPU_BSEL0	CPU_55S	CPU_2TO1	CPU_BSEL<0>	9B4 29C6
(See above)	CPU_55S	CPU_2TO1	NB_BSEL<0>	15C6 29C8
CPU_BSEL1	CPU_55S	CPU_2TO1	CPU_BSEL<1>	9A4 29B6
(See above)	CPU_55S	CPU_2TO1	NB_BSEL<1>	15C6 29B8
CPU_BSEL2	CPU_55S	CPU_2TO1	CPU_BSEL<2>	9A4 29A6
(See above)	CPU_55S	CPU_2TO1	NB_BSEL<2>	15B6 29B8
CPU_DPRSTP_L	CPU_55S	CPU_2TO1	CPU_DPRSTP_L	9B2 15B6 22C4 59C7
CPU_GTLREF	CPU_55S	CPU_GTLREF	CPU_GTLREF	9B4
CPU_COMP	CPU_55S	CPU_COMP	CPU_COMP<3>	9B3
CPU_COMP	CPU_27P4S	CPU_COMP	CPU_COMP<2>	9B3
CPU_COMP	CPU_55S	CPU_COMP	CPU_COMP<1>	9B3
CPU_COMP	CPU_27P4S	CPU_COMP	CPU_COMP<0>	9B3
XDP_TDI	CPU_55S	CPU_ITP	XDP_TDI	9B7 9C6 12B3
XDP_TDO	CPU_55S	CPU_ITP	XDP_TDO	9A7 9C6 12B5
XDP_TMS	CPU_55S	CPU_ITP	XDP_TMS	9B7 9C6 12B2
XDP_TCK	CPU_55S	CPU_ITP	XDP_TCK	9A7 9C6 12B2 12B3
XDP_TRST_L	CPU_55S	CPU_ITP	XDP_TRST_L	9A7 9C6 12B3
XDP_BPM_L	CPU_55S	CPU_ITP	XDP_BPM_L<4..0>	9C6 12B2 12B3
XDP_BPM_L5	CPU_55S	CPU_ITP	XDP_BPM_L<5>	9C5 12B2
	CLK_FSB_100D	CLK_FSB	XDP_CLK_P	75C3
	CLK_FSB_100D	CLK_FSB	XDP_CLK_N	75C3
(FSB_CPURST_L)	CPU_55S	CPU_ITP	ITP_CPURST_L	
	CPU_55S	CPU_2TO1	CPU_VID<6..0>	10B7 59C7
	CPU_55S	CPU_2TO1	IMVP6_VID<6..0>	
CPU_VCCSENSE	CPU_27P4S	CPU_VCCSENSE	CPU_VCCSENSE_P	10A6 59A4 59A5
CPU_VCCSENSE	CPU_27P4S	CPU_VCCSENSE	CPU_VCCSENSE_N	10A6 59A4 59A5
	CPU_27P4S	CPU_VCCSENSE	IMVP6_VSEN_P	
	CPU_27P4S	CPU_VCCSENSE	IMVP6_VSEN_N	

Preliminary

CPU/FSB Constraints

SYNC_MASTER=WFERRY SYNC_DATE=06/08/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE SHT 100 OF 106

WWW.AliSaler.Com

PCI-Express / DMI Bus Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
PCIE_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF
DMI_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
PCIE	*	20 MIL	?
DMI	*	20 MIL	?

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 7.2, 9.2 & 10.5

Video Signal Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
LVDS_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF
CRT_50S	*	Y	=50_OHM_SE	=50_OHM_SE	=50_OHM_SE	=STANDARD	=STANDARD
CRT_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT	
LVDS	*	20 MIL	?	
CRT	*	25 MIL	?	DG Says 40 mil spacing minimum
CRT_2CRT	*	20 MIL	?	
CRT_SYNC	*	25 MIL	?	DG Says 30 mil spacing minimum
CRT_SYNC2SYNC	*	20 MIL	?	
TVDAC	*	25 MIL	?	DG Says 40 mil spacing minimum
TVDAC_2TVDAC	*	20 MIL	?	

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
CRT	CRT	*	CRT_2CRT
CRT_SYNC	CRT_SYNC	*	CRT_SYNC2SYNC
TVDAC	TVDAC	*	TVDAC_2TVDAC

LVDS signals are 100-ohm +/- 20% differential impedence.
CRT & TVDAC signal single-ended impedence varies by location:
- 37.5-ohm +/- 15% from GMCH to first termination resistor.
- 50-ohm +/- 15% from first to second termination resistor.
- 55-ohm +/- 15% from second termination resistor to connector.

CRT_HSYNC/CRT_VSYNC signals are 55-ohm +/- 15% single-ended impedence.

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 8.1 - 8.3.

NET_TYPE			
ELECTRICAL_CONSTRAINT_SET	PHYSICAL	SPACING	
PEG_R2D	PCIE_100D	PCIE	PEG_D2R_N<1> 14D3 68B6
	PCIE_100D	PCIE	PEG_D2R_P<1> 14C3 68B6
	PCIE_100D	PCIE	PEG_R2D_C_P<3..0> 14B3 68B6 68C6
	PCIE_100D	PCIE	PEG_R2D_C_N<3..0> 14B3 14C3 68B6 68C6
DMI_N2S	DMI_100D	DMI	DMI_N2S_P<3..0> 15B3 23D2
	DMI_100D	DMI	DMI_N2S_N<3..0> 15B3 23D2
DMI_S2N	DMI_100D	DMI	DMI_S2N_P<3..0> 15B3 23D2
	DMI_100D	DMI	DMI_S2N_N<3..0> 15B3 15C3 23D2
LVDS_A_CLK	LVDS_100D	LVDS	LVDS_A_CLK_P 14C5 67B3
LVDS_A_CLK	LVDS_100D	LVDS	LVDS_A_CLK_N 14C5 67B3
LVDS_A_DATA	LVDS_100D	LVDS	LVDS_A_DATA_P<2..0> 14C5 67B2
LVDS_A_DATA	LVDS_100D	LVDS	LVDS_A_DATA_N<2..0> 14C5 67B2
LVDS_A_DATA3	LVDS_100D	LVDS	LVDS_A_DATA_P<3>
LVDS_A_DATA3	LVDS_100D	LVDS	LVDS_A_DATA_N<3>
LVDS_IBG		LVDS	LVDS_IBG 14D5 67A8
CRT_TVO_IREF		CRT	CRT_TVO_IREF 69D7 69D8
CRT_RED	CRT_50S	CRT	CRT_RED 69A8 69D5
CRT_GREEN	CRT_50S	CRT	CRT_GREEN 69A8 69D5
CRT_BLUE	CRT_50S	CRT	CRT_BLUE 69B8 69D5
CRT_SYNC	CRT_55S	CRT_SYNC	CRT_HSYNC_R 69C3 69D5
CRT_SYNC	CRT_55S	CRT_SYNC	CRT_VSYNC_R 69C3 69D5
TV_A_DAC	CRT_50S	TVDAC	TV_A_DAC 69B8 69D7
TV_B_DAC	CRT_50S	TVDAC	TV_B_DAC 69A8 69D7
TV_C_DAC	CRT_50S	TVDAC	TV_C_DAC 69A8 69D7

Preliminary

NB Constraints

SYNC_MASTER=WFERRY SYNC_DATE=06/12/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE	SHT	OF
NONE	101	106

WWW.AliSaler.Com

DDR2 Memory Bus Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
MEM_45S	*	Y	=45_OHM_SE	=45_OHM_SE	=45_OHM_SE	=STANDARD	=STANDARD
MEM_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
MEM_70D	*	Y	=70_OHM_DIFF	=70_OHM_DIFF	=70_OHM_DIFF	=70_OHM_DIFF	=70_OHM_DIFF
MEM_85D	*	Y	=85_OHM_DIFF	=85_OHM_DIFF	=85_OHM_DIFF	=85_OHM_DIFF	=85_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
MEM_CLK2MEM	*	=4:1_SPACING	?
MEM_CTRL2CTRL	*	=2:1_SPACING	?
MEM_CTRL2MEM	*	=3:1_SPACING	?
MEM_CMD2CMD	*	=1.5:1_SPACING	?
MEM_CMD2MEM	*	=3:1_SPACING	?
MEM_DATA2DATA	*	=1.5:1_SPACING	?
MEM_DATA2MEM	*	=3:1_SPACING	?
MEM_DQS2MEM	*	=3:1_SPACING	?
MEM_2OTHER	*	25 MIL	?

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CLK	MEM_CLK	*	MEM_CLK2MEM
MEM_CLK	MEM_CTRL	*	MEM_CLK2MEM
MEM_CLK	MEM_CMD	*	MEM_CLK2MEM
MEM_CLK	MEM_DATA	*	MEM_CLK2MEM
MEM_CLK	MEM_DQS	*	MEM_CLK2MEM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CMD	MEM_CLK	*	MEM_CMD2MEM
MEM_CMD	MEM_CTRL	*	MEM_CMD2MEM
MEM_CMD	MEM_CMD	*	MEM_CMD2CMD
MEM_CMD	MEM_DATA	*	MEM_CMD2MEM
MEM_CMD	MEM_DQS	*	MEM_CMD2MEM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CTRL	MEM_CLK	*	MEM_CTRL2MEM
MEM_CTRL	MEM_CTRL	*	MEM_CTRL2CTRL
MEM_CTRL	MEM_CMD	*	MEM_CTRL2MEM
MEM_CTRL	MEM_DATA	*	MEM_CTRL2MEM
MEM_CTRL	MEM_DQS	*	MEM_CTRL2MEM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_DATA	MEM_CLK	*	MEM_DATA2MEM
MEM_DATA	MEM_CTRL	*	MEM_DATA2MEM
MEM_DATA	MEM_CMD	*	MEM_DATA2MEM
MEM_DATA	MEM_DATA	*	MEM_DATA2DATA
MEM_DATA	MEM_DQS	*	MEM_DATA2MEM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CLK	*	*	MEM_2OTHER
MEM_CTRL	*	*	MEM_2OTHER
MEM_CMD	*	*	MEM_2OTHER
MEM_DATA	*	*	MEM_2OTHER
MEM_DQS	*	*	MEM_2OTHER

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_DQS	MEM_CLK	*	MEM_DQS2MEM
MEM_DQS	MEM_CTRL	*	MEM_DQS2MEM
MEM_DQS	MEM_CMD	*	MEM_DQS2MEM
MEM_DQS	MEM_DATA	*	MEM_DQS2MEM
MEM_DQS	MEM_DQS	*	MEM_DQS2MEM

Need to support MEM_*-style wildcards!

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Section 6.2

Memory Net Properties

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	SPACING		
MEM_A_CLK	MEM_70D	MEM_CLK	MEM_CLK_P<2..0>	15D3 30A4 30D4
	MEM_70D	MEM_CLK	MEM_CLK_N<2..0>	15D3 30A4 30D4
MEM_A_CNTL	MEM_45S	MEM_CTRL	MEM_CKE<1..0>	15D3 30C4 30C6 32D6
MEM_A_CNTL	MEM_45S	MEM_CTRL	MEM_CS_L<1..0>	15D3 30B4 30B6 32D6
MEM_A_CNTL	MEM_45S	MEM_CTRL	MEM_ODT<1..0>	15C3 30B4 30B6 32D6
MEM_A_CMD	MEM_55S	MEM_CMD	MEM_A_A<14..0>	15C6 16B5 16C5 30B4 30B6 30C4 30C6 32C6
MEM_A_CMD	MEM_55S	MEM_CMD	MEM_A_BS<2..0>	16D5 30B4 30B6 30C6 32C6
MEM_A_CMD	MEM_55S	MEM_CMD	MEM_A_RAS_L	16B5 30B4 32B6
MEM_A_CMD	MEM_55S	MEM_CMD	MEM_A_CAS_L	16D5 30B6 32B6
MEM_A_CMD	MEM_55S	MEM_CMD	MEM_A_WE_L	16B5 30B6 32B6
MEM_A_DQ_BYTE0	MEM_55S	MEM_DATA	MEM_A_DQ<7..0>	16D8 30D4 30D6
MEM_A_DQ_BYTE1	MEM_55S	MEM_DATA	MEM_A_DQ<15..8>	16C8 30D4 30D6
MEM_A_DQ_BYTE2	MEM_55S	MEM_DATA	MEM_A_DQ<23..16>	16C8 30C4 30C6
MEM_A_DQ_BYTE3	MEM_55S	MEM_DATA	MEM_A_DQ<31..24>	16C8 30C4 30C6 30D4 30D6
MEM_A_DQ_BYTE4	MEM_55S	MEM_DATA	MEM_A_DQ<39..32>	16B8 16C8 30B4 30B6
MEM_A_DQ_BYTE5	MEM_55S	MEM_DATA	MEM_A_DQ<47..40>	16B8 30A4 30A6 30B4 30B6
MEM_A_DQ_BYTE6	MEM_55S	MEM_DATA	MEM_A_DQ<55..48>	16B8 30A4 30A6
MEM_A_DQ_BYTE7	MEM_55S	MEM_DATA	MEM_A_DQ<63..56>	16A8 16B8 30A4 30A6
MEM_A_DM0	MEM_55S	MEM_DATA	MEM_A_DM<0>	16D5 30D4
MEM_A_DM1	MEM_55S	MEM_DATA	MEM_A_DM<1>	16D5 30D4
MEM_A_DM2	MEM_55S	MEM_DATA	MEM_A_DM<2>	16C5 30C6
MEM_A_DM3	MEM_55S	MEM_DATA	MEM_A_DM<3>	16C5 30C4
MEM_A_DM4	MEM_55S	MEM_DATA	MEM_A_DM<4>	16C5 30B4
MEM_A_DM5	MEM_55S	MEM_DATA	MEM_A_DM<5>	16C5 30B6
MEM_A_DM6	MEM_55S	MEM_DATA	MEM_A_DM<6>	16C5 30A6
MEM_A_DM7	MEM_55S	MEM_DATA	MEM_A_DM<7>	16C5 30A4
MEM_A_DQS0	MEM_85D	MEM_DQS	MEM_A_DQS_P<0>	16C5 30D6
	MEM_85D	MEM_DQS	MEM_A_DQS_N<0>	16C5 30D6
MEM_A_DQS1	MEM_85D	MEM_DQS	MEM_A_DQS_P<1>	16C5 30D6
	MEM_85D	MEM_DQS	MEM_A_DQS_N<1>	16C5 30D6
MEM_A_DQS2	MEM_85D	MEM_DQS	MEM_A_DQS_P<2>	16C5 30C4
	MEM_85D	MEM_DQS	MEM_A_DQS_N<2>	16C5 30C4
MEM_A_DQS3	MEM_85D	MEM_DQS	MEM_A_DQS_P<3>	16C5 30C6
	MEM_85D	MEM_DQS	MEM_A_DQS_N<3>	16C5 30C6
MEM_A_DQS4	MEM_85D	MEM_DQS	MEM_A_DQS_P<4>	16C5 30B6
	MEM_85D	MEM_DQS	MEM_A_DQS_N<4>	16C5 30B6
MEM_A_DQS5	MEM_85D	MEM_DQS	MEM_A_DQS_P<5>	16C5 30B4
	MEM_85D	MEM_DQS	MEM_A_DQS_N<5>	16C5 30B4
MEM_A_DQS6	MEM_85D	MEM_DQS	MEM_A_DQS_P<6>	16C5 30A4
	MEM_85D	MEM_DQS	MEM_A_DQS_N<6>	16C5 30A4
MEM_A_DQS7	MEM_85D	MEM_DQS	MEM_A_DQS_P<7>	16C5 30A6
	MEM_85D	MEM_DQS	MEM_A_DQS_N<7>	16C5 30A6
MEM_B_CLK	MEM_70D	MEM_CLK	MEM_CLK_P<5..3>	15D3 31A4 31D4
	MEM_70D	MEM_CLK	MEM_CLK_N<5..3>	15D3 31A4 31D4
MEM_B_CNTL	MEM_45S	MEM_CTRL	MEM_CKE<4..3>	15D3 31C4 31C6 32D5 32D6
MEM_B_CNTL	MEM_45S	MEM_CTRL	MEM_CS_L<3..2>	15C3 15D3 31B4 31B6 32D6
MEM_B_CNTL	MEM_45S	MEM_CTRL	MEM_ODT<3..2>	15C3 31B4 31B6 32D6
MEM_B_CMD	MEM_55S	MEM_CMD	MEM_B_A<14..0>	15C6 16B1 16C1 31B4 31B6 31C4 31C6 32A5 32B5
MEM_B_CMD	MEM_55S	MEM_CMD	MEM_B_BS<2..0>	16D1 31B4 31B6 31C6 32A6
MEM_B_CMD	MEM_55S	MEM_CMD	MEM_B_RAS_L	16B1 31B4 32A6
MEM_B_CMD	MEM_55S	MEM_CMD	MEM_B_CAS_L	16D1 31B6 32A6
MEM_B_CMD	MEM_55S	MEM_CMD	MEM_B_WE_L	16B1 31B6 32A6
MEM_B_DQ_BYTE0	MEM_55S	MEM_DATA	MEM_B_DQ<7..0>	16D4 31D4 31D6
MEM_B_DQ_BYTE1	MEM_55S	MEM_DATA	MEM_B_DQ<15..8>	16C4 31D4 31D6
MEM_B_DQ_BYTE2	MEM_55S	MEM_DATA	MEM_B_DQ<23..16>	16C4 31C4 31C6
MEM_B_DQ_BYTE3	MEM_55S	MEM_DATA	MEM_B_DQ<31..24>	16C4 31C4 31C6
MEM_B_DQ_BYTE4	MEM_55S	MEM_DATA	MEM_B_DQ<39..32>	16B4 16C4 31B4 31B6
MEM_B_DQ_BYTE5	MEM_55S	MEM_DATA	MEM_B_DQ<47..40>	16B4 31A4 31A6 31B4 31B6
MEM_B_DQ_BYTE6	MEM_55S	MEM_DATA	MEM_B_DQ<55..48>	16B4 31A4 31A6
MEM_B_DQ_BYTE7	MEM_55S	MEM_DATA	MEM_B_DQ<63..56>	16A4 16B4 31A4 31A6
MEM_B_DM0	MEM_55S	MEM_DATA	MEM_B_DM<0>	16D1 31D4
MEM_B_DM1	MEM_55S	MEM_DATA	MEM_B_DM<1>	16D1 31D4
MEM_B_DM2	MEM_55S	MEM_DATA	MEM_B_DM<2>	16C1 31C4
MEM_B_DM3	MEM_55S	MEM_DATA	MEM_B_DM<3>	16C1 31C6
MEM_B_DM4	MEM_55S	MEM_DATA	MEM_B_DM<4>	16C1 31B4
MEM_B_DM5	MEM_55S	MEM_DATA	MEM_B_DM<5>	16C1 31A6
MEM_B_DM6	MEM_55S	MEM_DATA	MEM_B_DM<6>	16C1 31A4
MEM_B_DM7	MEM_55S	MEM_DATA	MEM_B_DM<7>	16C1 31A6
MEM_B_DQS0	MEM_85D	MEM_DQS	MEM_B_DQS_P<0>	16C1 31D6
	MEM_85D	MEM_DQS	MEM_B_DQS_N<0>	16C1 31D6
MEM_B_DQS1	MEM_85D	MEM_DQS	MEM_B_DQS_P<1>	16C1 31D6
	MEM_85D	MEM_DQS	MEM_B_DQS_N<1>	16C1 31D6
MEM_B_DQS2	MEM_85D	MEM_DQS	MEM_B_DQS_P<2>	16C1 31C6
	MEM_85D	MEM_DQS	MEM_B_DQS_N<2>	16C1 31C6
MEM_B_DQS3	MEM_85D	MEM_DQS	MEM_B_DQS_P<3>	16C1 31C4
	MEM_85D	MEM_DQS	MEM_B_DQS_N<3>	16C1 31C4
MEM_B_DQS4	MEM_85D	MEM_DQS	MEM_B_DQS_P<4>	16C1 31B6
	MEM_85D	MEM_DQS	MEM_B_DQS_N<4>	16C1 31B6
MEM_B_DQS5	MEM_85D	MEM_DQS	MEM_B_DQS_P<5>	16C1 31A4
	MEM_85D	MEM_DQS	MEM_B_DQS_N<5>	16C1 31B4
MEM_B_DQS6	MEM_85D	MEM_DQS	MEM_B_DQS_P<6>	16C1 31A6
	MEM_85D	MEM_DQS	MEM_B_DQS_N<6>	16C1 31A6
MEM_B_DQS7	MEM_85D	MEM_DQS	MEM_B_DQS_P<7>	16C1 31A4
	MEM_85D	MEM_DQS	MEM_B_DQS_N<7>	16C1 31A4

Preliminary

Memory Constraints

SYNC_MASTER=WFERRY SYNC_DATE=06/08/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE SHT 102 OF 106

WWW.AliSaler.Com

Disk Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
IDE_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
SATA_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
SATA_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
IDE	*	=1.8:1_SPACING	?
SATA	*	20 MIL	?

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 10.7 & 10.9

HD Audio Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
HDA_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
HDA	*	=1.8:1_SPACING	?

SOURCE: Napa Platform DG, Rev 0.9 (#17978), Section 10.9.1

USB 2.0 Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
USB_60S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
USB_90D	*	Y	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
USB	*	20 MIL	?
USB_2CLK	*	25 MIL	?

DG says minimum spacing 50 mils to clocks

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Section 10.13.2

Internal Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
SMB_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
SPI_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
SMB	*	=3:1_SPACING	?
SPI	*	=1.8:1_SPACING	?

SOURCE: Santa Platform DG, Rev 1.0 (#21112), Section 10.17

NET_TYPE			
ELECTRICAL_CONSTRAINT_SET	PHYSICAL	SPACING	
IDE_PDD	IDE_55S	IDE	IDE_PDD<15..0> 22B4 22C4 39C3 39C5
IDE_PDA	IDE_55S	IDE	IDE_PDA<2..0> 22B4 39B3 39B5
IDE_PDCS	IDE_55S	IDE	IDE_PDCS1_L 22B4 39B5
IDE_PDCS	IDE_55S	IDE	IDE_PDCS3_L 22B4 39B3
IDE_CNTL	IDE_55S	IDE	IDE_PDIOW_L 22B4 39B5
IDE_PDIOR_L	IDE_55S	IDE	IDE_PDIOR_L 22B4 39C3
IDE_CNTL	IDE_55S	IDE	IDE_PDDACK_L 22B4 39B3
IDE_CNTL	IDE_55S	IDE	IDE_PDDREQ 22A4 39C3
IDE_PDIORDY	IDE_55S	IDE	IDE_PDIORDY 22A4 39B5
IDE_IRQ14	IDE_55S	IDE	IDE_IRQ14 22B4 39B5
IDE_RST_L	IDE_55S	IDE	ODD_RST_5VTOL_L 23B6 39A8
SATA_A_R2D	SATA_100D	SATA	SATA_A_R2D_C_P 22B6 40D4
	SATA_100D	SATA	SATA_A_R2D_C_N 22B6 40D4
	SATA_100D	SATA	SATA_A_R2D_P 40D7
	SATA_100D	SATA	SATA_A_R2D_N 40D7
SATA_A_D2R	SATA_100D	SATA	SATA_A_D2R_P 22B6 40C4
	SATA_100D	SATA	SATA_A_D2R_N 22B6 40D4
	SATA_100D	SATA	SATA_A_D2R_C_P 40C7
	SATA_100D	SATA	SATA_A_D2R_C_N 40D7
HDA_BIT_CLK	HDA_55S	HDA	HDA_BIT_CLK 8A6 22C8
	HDA_55S	HDA	HDA_BIT_CLK_R 22C6
HDA_SYNC	HDA_55S	HDA	HDA_SYNC 8A6 22C8
	HDA_55S	HDA	HDA_SYNC_R 22C6
HDA_RST_L	HDA_55S	HDA	HDA_RST_L 8A6 22C8
	HDA_55S	HDA	HDA_RST_L_R 22C6
HDA_SDIN0	HDA_55S	HDA	HDA_SDIN0 8A6 22C8
HDA_SDOUT	HDA_55S	HDA	HDA_SDOUT 8A6 22B8
	HDA_55S	HDA	HDA_SDOUT_R 22B6
USB_EXTA	USB_90D	USB	USB_EXTA_P 8C1 23C2
	USB_90D	USB	USB_EXTA_N 8C1 23C2
	USB_90D	USB	USB_EXTA_MUXED_P
	USB_90D	USB	USB_EXTA_MUXED_N
USB_MINI	USB_90D	USB	USB_MINI_P 8C1 23C2
	USB_90D	USB	USB_MINI_N 8C1 23C2
USB_3G	USB_90D	USB	USB_3G_P
	USB_90D	USB	USB_3G_N
USB_CAMERA	USB_90D	USB	USB_CAMERA_P 8C1 23C2
	USB_90D	USB	USB_CAMERA_N 8C1 23C2
USB_BT	USB_90D	USB	USB_BT_P 8C1 8C2 23C2
	USB_90D	USB	USB_BT_N 8B1 8B2 23C2
USB_TPAD	USB_90D	USB	USB_TPAD_P 8C1 23C2
	USB_90D	USB	USB_TPAD_N 8C1 23C2
USB_IR	USB_90D	USB	USB_IR_P 8C1 8C2 23C2
	USB_90D	USB	USB_IR_N 8C1 8C2 23C2
USB_EXTB	USB_90D	USB	USB_EXTB_P 8B1 23C2
	USB_90D	USB	USB_EXTB_N 8B1 23C2
USB_EXCARD	USB_90D	USB	USB_EXCARD_P 8B1 23C2
	USB_90D	USB	USB_EXCARD_N 8B1 23C2
USB_EXTC	USB_90D	USB	USB_EXTC_P 8B1 23C2
	USB_90D	USB	USB_EXTC_N 8B1 23C2
USB_RBIAS	USB_60S		USB_RBIAS 23B3
SMB_SB_SCL	SMB_55S	SMB	SMB_CLK 24D5 47D8
SMB_SB_SDA	SMB_55S	SMB	SMB_DATA 24D5 47D8
SMB_SB_ME_SCL	SMB_55S	SMB	SMB_ME_CLK 24D5 47A8
SMB_SB_ME_SDA	SMB_55S	SMB	SMB_ME_DATA 24D5 47A8
SPI_SCLK	SPI_55S	SPI	SPI_SCLK_R 23C5 52C7
	SPI_55S	SPI	SPI_A_SCLK_R 52C5
SPI_SI	SPI_55S	SPI	SPI_SI_R 23C5 52C3
	SPI_55S	SPI	SPI_A_SI_R 52C4
SPI_SO	SPI_55S	SPI	SPI_SO 23C5 52C3
	SPI_55S	SPI	SPI_A_SO_R 52C4
SPI_CE_L0	SPI_55S	SPI	SPI_CE_R_L<0> 23C5 52C7
	SPI_55S	SPI	SPI_CE_L<0> 52C6
SPI_CE_L1	SPI_55S	SPI	SPI_CE_R_L<1>

SB Constraints (1 of 2)

SYNC_MASTER=WFERRY SYNC_DATE=06/12/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE SHT 103 OF 106

Preliminary

WWW.AliSaler.Com

PCI Bus Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
PCI_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
PCI	*	=2:1_SPACING	?

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 10.18.1 & 10.19

Platform LAN (Nineveh) Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
LAN_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
ENET_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF
GLAN_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
ENET_CLK	*	=2.5:1_SPACING	?
ENET_GLAN	*	20 MILS	?
ENET_LAN	*	=1.5:1_SPACING	?
ENET_MDI	*	25 MILS	?

DG says 30 mils min separation.

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 10.27.1.5-7, 10.29 & 10.30

Controller Link (AMT) Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
CLINK_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
CLINK_12MIL	*	Y	12 MILS	5 MILS	300 MILS	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
CLINK	*	=1.8:1_SPACING	?
CLINK_VREF	*	12 MILS	?

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 10.27.1.5-7, 10.29 & 10.30

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING	
PCI_AD	PCI_55S	PCI	PCI_AD<18..0> 23A8 23B8 37B5 37C5
PCI_AD19	PCI_55S	PCI	PCI_AD<19> 23A8 37B6
PCI_AD20	PCI_55S	PCI	PCI_AD<20> 23A8 37B5
PCI_AD	PCI_55S	PCI	PCI_AD<31..21> 23A8 37B5
PCI_AD	PCI_55S	PCI	PCI_PAR 23A6 37B5
PCI_C_BE_L	PCI_55S	PCI	PCI_C_BE_L<3..0> 23B6 37B5
PCI_CNTL	PCI_55S	PCI	PCI_IRDY_L 23A4 23A6 37A5
PCI_CNTL	PCI_55S	PCI	PCI_DEVSEL_L 23A4 23A6 37A5
PCI_CNTL	PCI_55S	PCI	PCI_PERR_L 23A4 23A6 37A5
PCI_LOCK_L	PCI_55S	PCI	PCI_LOCK_L 23A4 23A6
PCI_CNTL	PCI_55S	PCI	PCI_SERR_L 23A4 23A6 37A5
PCI_CNTL	PCI_55S	PCI	PCI_STOP_L 23A4 23A6 37A5
PCI_CNTL	PCI_55S	PCI	PCI_TRDY_L 23A4 23A6 37A5
PCI_CNTL	PCI_55S	PCI	PCI_FRAME_L 23A4 23A6 37A5
PCI_FW_REQ_L	PCI_55S	PCI	PCI_FW_REQ_L 23A4 23B6 37A5
PCI_FW_GNT_L	PCI_55S	PCI	PCI_FW_GNT_L 23B5 37A5
PCI_REQ1_L	PCI_55S	PCI	PCI_REQ1_L 23A4 23B6
PCI_GNT1_L	PCI_55S	PCI	PCI_GNT1_L
PCI_REQ2_L	PCI_55S	PCI	PCI_REQ2_L 23A4 23B6
PCI_GNT2_L	PCI_55S	PCI	PCI_GNT2_L
INT_PIRQA_L	PCI_55S	PCI	INT_PIRQA_L 23A4 23A8
INT_PIRQB_L	PCI_55S	PCI	INT_PIRQB_L 23A4 23A8
INT_PIRQC_L	PCI_55S	PCI	INT_PIRQC_L 23A4 23A8
INT_PIRQD_L	PCI_55S	PCI	INT_PIRQD_L 23A4 23A8 37A5
INT_PIRQE_L	PCI_55S	PCI	INT_PIRQE_L 23A4 23A6
INT_PIRQF_L	PCI_55S	PCI	INT_PIRQF_L 23A4 23A6
PCIE_E_R2D	PCIE_100D	PCIE	PCIE_E_R2D_C_P 33B5 33B6
	PCIE_100D	PCIE	PCIE_E_R2D_C_N 33B5 33B6
PCIE_E_D2R	PCIE_100D	PCIE	PCIE_E_D2R_P 33B5
	PCIE_100D	PCIE	PCIE_E_D2R_N 33B5 33C5
GLAN_COMP			GLAN_COMP 22C6
ENET_LAN	LAN_55S	ENET_LAN	LAN_RSTSYNC
ENET_LAN	LAN_55S	ENET_LAN	LAN_R2D<2..0>
ENET_LAN	LAN_55S	ENET_LAN	LAN_D2R<2..0>
ENET_GLAN_CLK	LAN_55S	ENET_CLK	ENET_GLAN_CLK_R
	LAN_55S	ENET_CLK	ENET_GLAN_CLK
ENET_MDI0	ENET_100D	ENET_MDI	ENET_MDI_P<0> 34B8 36B7
	ENET_100D	ENET_MDI	ENET_MDI_N<0> 34B8 36B7
ENET_MDI1	ENET_100D	ENET_MDI	ENET_MDI_P<1> 34B8 36C7
	ENET_100D	ENET_MDI	ENET_MDI_N<1> 34B8 36C7
ENET_MDI2	ENET_100D	ENET_MDI	ENET_MDI_P<2> 34B8 36B7
	ENET_100D	ENET_MDI	ENET_MDI_N<2> 34B8 36C7
ENET_MDI3	ENET_100D	ENET_MDI	ENET_MDI_P<3> 34B8 36C7
	ENET_100D	ENET_MDI	ENET_MDI_N<3> 34B8 36C7
CLINK_NB	CLINK_55S	CLINK	CLINK_NB_CLK 15A3 24C3
CLINK_NB	CLINK_55S	CLINK	CLINK_NB_DATA 15A3 24C3
CLINK_NB_RESET_L	CLINK_55S	CLINK	CLINK_NB_RESET_L 15A3 24C3
CLINK_WLAN	CLINK_55S	CLINK	CLINK_WLAN_CLK 24C3
CLINK_WLAN	CLINK_55S	CLINK	CLINK_WLAN_DATA 24C3
CLINK_WLAN_RESET_L	CLINK_55S	CLINK	CLINK_WLAN_RESET_L 24D5
NB_CLINK_VREF	CLINK_12MIL	CLINK_VREF	NB_CLINK_VREF 15A4
SB_CLINK_VREF0	CLINK_12MIL	CLINK_VREF	SB_CLINK_VREF0 24C3
SB_CLINK_VREF1	CLINK_12MIL	CLINK_VREF	SB_CLINK_VREF1 24C3

Preliminary

SB Constraints (2 of 2)

SYNC_MASTER=WFERRY SYNC_DATE=06/12/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE D | DRAWING NUMBER 051-7559 | REV. H

SCALE NONE | SHT 104 OF 106

WWW.AliSaler.Com

Clock Signal Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
CLK_FSB_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF
CLK_PCIE_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF
CLK_MED_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
CLK_SLOW_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
CLK_FSB	*	25 MIL	?
CLK_PCIE	*	20 MIL	?
CLK_MED	*	20 MIL	?
CLK_SLOW	*	10 MIL	?

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 14.1 - 14.6

Clock Net Properties

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	SPACING		
CK505_CPU	CLK_FSB_100D	CLK_FSB	CK505_CPU0_P	6C7 28C4 29D6
CK505_CPU	CLK_FSB_100D	CLK_FSB	CK505_CPU0_N	6C7 28C4 29D6
CK505_NB	CLK_FSB_100D	CLK_FSB	CK505_CPU1_P	6C7 28C4 29D6
CK505_NB	CLK_FSB_100D	CLK_FSB	CK505_CPU1_N	6C7 28C4 29D6
CK505_ITP	CLK_FSB_100D	CLK_FSB	CK505_CPU2_ITP_SRC10_P	6C7 28C4 29D6
CK505_ITP	CLK_FSB_100D	CLK_FSB	CK505_CPU2_ITP_SRC10_N	6C7 28C4 29D6
CK505_PCIF0	CLK_MED_55S	CLK_MED	CK505_PCIF0_CLK	28B8 29B6
CK505_PCIF1	CLK_MED_55S	CLK_MED	CK505_PCIF1_CLK	6C7 28B6 29B6
CK505_PCI1	CLK_MED_55S	CLK_MED	CK505_PCI1_CLK	28B6 29B6
CK505_PCI2	CLK_MED_55S	CLK_MED	CK505_PCI2_CLK	8C4 28B6
CK505_PCI3	CLK_MED_55S	CLK_MED	CK505_PCI3_CLK	28B6 29A6
CK505_PCI4	CLK_MED_55S	CLK_MED	CK505_PCI4_CLK	8C4 28B6
CK505_PCI5	CLK_MED_55S	CLK_MED	CK505_PCI5_FCTSEL1	28B6 29B2
(CPU_BSEL0)	CLK_MED_55S	CLK_MED	CK505_USB48_FSA	28A4 29D8
(CPU_BSEL2)	CLK_MED_55S	CLK_MED	CK505_CLK14P3M_TIMER	28A4 29D8
CK505_DOT96	CLK_PCIE_100D	CLK_PCIE	CK505_DOT96_27M_P	6C7 28A4 29B6
	CLK_PCIE_100D	CLK_PCIE	CK505_DOT96_27M_N	6C7 28A4 29B6
CK505_LVDS	CLK_PCIE_100D	CLK_PCIE	CK505_LVDS_P	6C7 28B4 29C6
	CLK_PCIE_100D	CLK_PCIE	CK505_LVDS_N	6C7 28B4 29C6
CK505_SRC1	CLK_PCIE_100D	CLK_PCIE	CK505_SRC1_P	
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC1_N	
CK505_SRC2	CLK_PCIE_100D	CLK_PCIE	CK505_SRC2_P	6C7 28B4 29C6
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC2_N	6C7 28B4 29C6
CK505_SRC3	CLK_PCIE_100D	CLK_PCIE	CK505_SRC3_P	
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC3_N	
CK505_SRC4	CLK_PCIE_100D	CLK_PCIE	CK505_SRC4_P	6C7 28B4 29C6
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC4_N	6C7 28B4 29C6
CK505_SRC5	CLK_PCIE_100D	CLK_PCIE	CK505_SRC5_P	6C7 28B4 29C6
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC5_N	6C7 28B4 29C6
CK505_SRC6	CLK_PCIE_100D	CLK_PCIE	CK505_SRC6_P	6C7 28B4 29C6
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC6_N	6C7 28B4 29B6
CK505_SRC7	CLK_PCIE_100D	CLK_PCIE	CK505_SRC7_P	
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC7_N	
CK505_SRC8	CLK_PCIE_100D	CLK_PCIE	CK505_SRC8_P	6B7 28A4 29B6
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC8_N	6B7 28A4 29B6
(CK505_CPU)	CLK_FSB_100D	CLK_FSB	FSB_CLK_CPU_P	9B6 29D3
(CK505_CPU)	CLK_FSB_100D	CLK_FSB	FSB_CLK_CPU_N	9B6 29D3
(CK505_NB)	CLK_FSB_100D	CLK_FSB	FSB_CLK_NB_P	13B3 29D3
(CK505_NB)	CLK_FSB_100D	CLK_FSB	FSB_CLK_NB_N	13B3 29D3
(CK505_ITP)	CLK_FSB_100D	CLK_FSB	XDP_CLK_P	70A3
(CK505_ITP)	CLK_FSB_100D	CLK_FSB	XDP_CLK_N	70A3
(CK505_PCIF0)	CLK_MED_55S	CLK_MED	PCI_CLK33M_LPCPLUS	6C2 29B3 46C4
(CK505_PCIF1)	CLK_MED_55S	CLK_MED	PCI_CLK33M_SB	23A6 29A5 29B3
(CK505_PCI1)	CLK_MED_55S	CLK_MED	PCI_CLK33M_FW	29A5 29B3 37A5
(CK505_PCI2)	CLK_MED_55S	CLK_MED	PCI_CLK33M_TPM	
(CK505_PCI3)	CLK_MED_55S	CLK_MED	PCI_CLK33M_SMC	29A3 29A5 44C8
			CK505 PCI4 is project-specific	
			CK505 PCI5 is project-specific	
(CPU_BSEL0)	CLK_MED_55S	CLK_MED	SB_CLK48M_USBCTLR	24D3 29A5 29D6
(CPU_BSEL2)	CLK_MED_55S	CLK_MED	SB_CLK14P3M_TIMER	24D3 29A5 29D6
(CPU_BSEL0)	CLK_MED_55S	CLK_MED	CK505_FSA	29C8 29D6
(CPU_BSEL2)	CLK_MED_55S	CLK_MED	CK505_FSC	29A8 29D6
(CK505_DOT96)	CLK_PCIE_100D	CLK_PCIE	NB_CLK96M_DOT_P	8B1 29B3
(CK505_DOT96)	CLK_PCIE_100D	CLK_PCIE	NB_CLK96M_DOT_N	8B1 29B3
(CK505_LVDS)	CLK_PCIE_100D	CLK_PCIE	NB_CLK100M_DPLLSS_P	8B1 29C3
(CK505_LVDS)	CLK_PCIE_100D	CLK_PCIE	NB_CLK100M_DPLLSS_N	8A1 29C3
(CK505_SRC1)	CLK_PCIE_100D	CLK_PCIE	PEG_CLK100M_P	
(CK505_SRC1)	CLK_PCIE_100D	CLK_PCIE	PEG_CLK100M_N	
(CK505_SRC2)	CLK_PCIE_100D	CLK_PCIE	SB_CLK100M_DMI_P	23C2 29C3
(CK505_SRC2)	CLK_PCIE_100D	CLK_PCIE	SB_CLK100M_DMI_N	23D2 29C3
(CK505_SRC3)	CLK_PCIE_100D	CLK_PCIE	PCIE_CLK100M_EXCARD_P	
(CK505_SRC3)	CLK_PCIE_100D	CLK_PCIE	PCIE_CLK100M_EXCARD_N	
(CK505_SRC4)	CLK_PCIE_100D	CLK_PCIE	SB_CLK100M_SATA_P	22B6 29C3
(CK505_SRC4)	CLK_PCIE_100D	CLK_PCIE	SB_CLK100M_SATA_N	22B6 29C3
(CK505_SRC5)	CLK_PCIE_100D	CLK_PCIE	NB_CLK100M_PCIE_P	15C3 29C3
(CK505_SRC5)	CLK_PCIE_100D	CLK_PCIE	NB_CLK100M_PCIE_N	15C3 29C3
(CK505_SRC6)	CLK_PCIE_100D	CLK_PCIE	PCIE_CLK100M_MINI_P	29C3 33C5
(CK505_SRC6)	CLK_PCIE_100D	CLK_PCIE	PCIE_CLK100M_MINI_N	29B3 33C5
			CK505 SRC7 is project-specific	
			CK505 SRC8 is project-specific	

Preliminary

Clock Constraints

SYNC_MASTER=WFERRY SYNC_DATE=06/12/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7559	H

SCALE: NONE SHT 105 OF 106

WWW.AliSaler.Com

FireWire Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
FW_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
FW_110D	*	Y	=110_OHM_DIFF	=110_OHM_DIFF	=110_OHM_DIFF	=110_OHM_DIFF	=110_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
FW	*	=2:1_SPACING	?
FW_TP	*	=3:1_SPACING	?

FireWire Net Properties

NET_TYPE ELECTRICAL_CONSTRAINT_SET	PHYSICAL	SPACING	
FW_D_CTL	FW_55S	FW	FW_LINK<7..0>
FW_D_CTL	FW_55S	FW	FW_CTL<1..0>
FW_LCLK	CLK_MED_55S	CLK_MED	CLKFW_LINK_LCLK
	CLK_MED_55S	CLK_MED	CLKFW_PHY_LCLK
FW_PCLK	CLK_MED_55S	CLK_MED	CLKFW_LINK_PCLK
	CLK_MED_55S	CLK_MED	CLKFW_PHY_PCLK
FW_LKON	FW_55S	FW	FW_LKON
	FW_55S	FW	FW_LKON_R
FW_LPS	FW_55S	FW	FW_LPS
FW_LREQ	FW_55S	FW	FW_LREQ
FW_PINT	FW_55S	FW	FW_PINT
FWPHY_CLK98P304M_XI	CLK_MED_55S	CLK_MED	CLK98P304M_FW_XI_R
	CLK_MED_55S	CLK_MED	CLK98P304M_FW_XI
FW_0_TPA	FW_110D	FW_TP	FW_0_TPA_P
FW_0_TPA	FW_110D	FW_TP	FW_0_TPA_N
FW_0_TPB	FW_110D	FW_TP	FW_0_TPB_P
	FW_110D	FW_TP	FW_0_TPB_N
FW_1_TPA	FW_110D	FW_TP	FW_1_TPA_P
FW_1_TPA	FW_110D	FW_TP	FW_1_TPA_N
FW_1_TPB	FW_110D	FW_TP	FW_1_TPB_P
	FW_110D	FW_TP	FW_1_TPB_N
Port 2 Not Used			

SMC SMBus Net Properties

NET_TYPE ELECTRICAL_CONSTRAINT_SET	PHYSICAL	SPACING		
SMBUS_SMC_A_S3_SCL	SMB_55S	SMB	SMBUS_SMC_A_S3_SCL	47D2
SMBUS_SMC_A_S3_SDA	SMB_55S	SMB	SMBUS_SMC_A_S3_SDA	47D2
SMBUS_SMC_B_S0_SCL	SMB_55S	SMB	SMBUS_SMC_B_S0_SCL	68Ω 47C5
SMBUS_SMC_B_S0_SDA	SMB_55S	SMB	SMBUS_SMC_B_S0_SDA	68Ω 47C5
SMBUS_SMC_0_S0_SCL	SMB_55S	SMB	SMBUS_SMC_0_S0_SCL	47D5
SMBUS_SMC_0_S0_SDA	SMB_55S	SMB	SMBUS_SMC_0_S0_SDA	47D5
SMBUS_SMC_BSA_SCL	SMB_55S	SMB	SMBUS_SMC_BSA_SCL	47C2
SMBUS_SMC_BSA_SDA	SMB_55S	SMB	SMBUS_SMC_BSA_SDA	47C2
SMBUS_SMC_MGMT_SCL	SMB_55S	SMB	SMBUS_SMC_MGMT_SCL	47B2
SMBUS_SMC_MGMT_SDA	SMB_55S	SMB	SMBUS_SMC_MGMT_SDA	47B2

Preliminary

FireWire & SMC Constraints

SYNC_MASTER=WFERRY SYNC_DATE=06/12/2006

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.

SIZE D | DRAWING NUMBER 051-7559 | REV. H

SCALE NONE | SHT 106 OF 106

WWW.AliSaler.Com